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Vol. I

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1935

No. 767

DUPLATE CORPORATION AND PITTSBURGH PLATE GLASS COMPANY, PETITIONERS,

vs.

TRIPLEX SAFETY GLASS COMPANY OF NORTH AMERICA

No. 768

DUPLATE CORPORATION AND PITTSBURGH PLATE GLASS COMPANY, PETITIONERS,

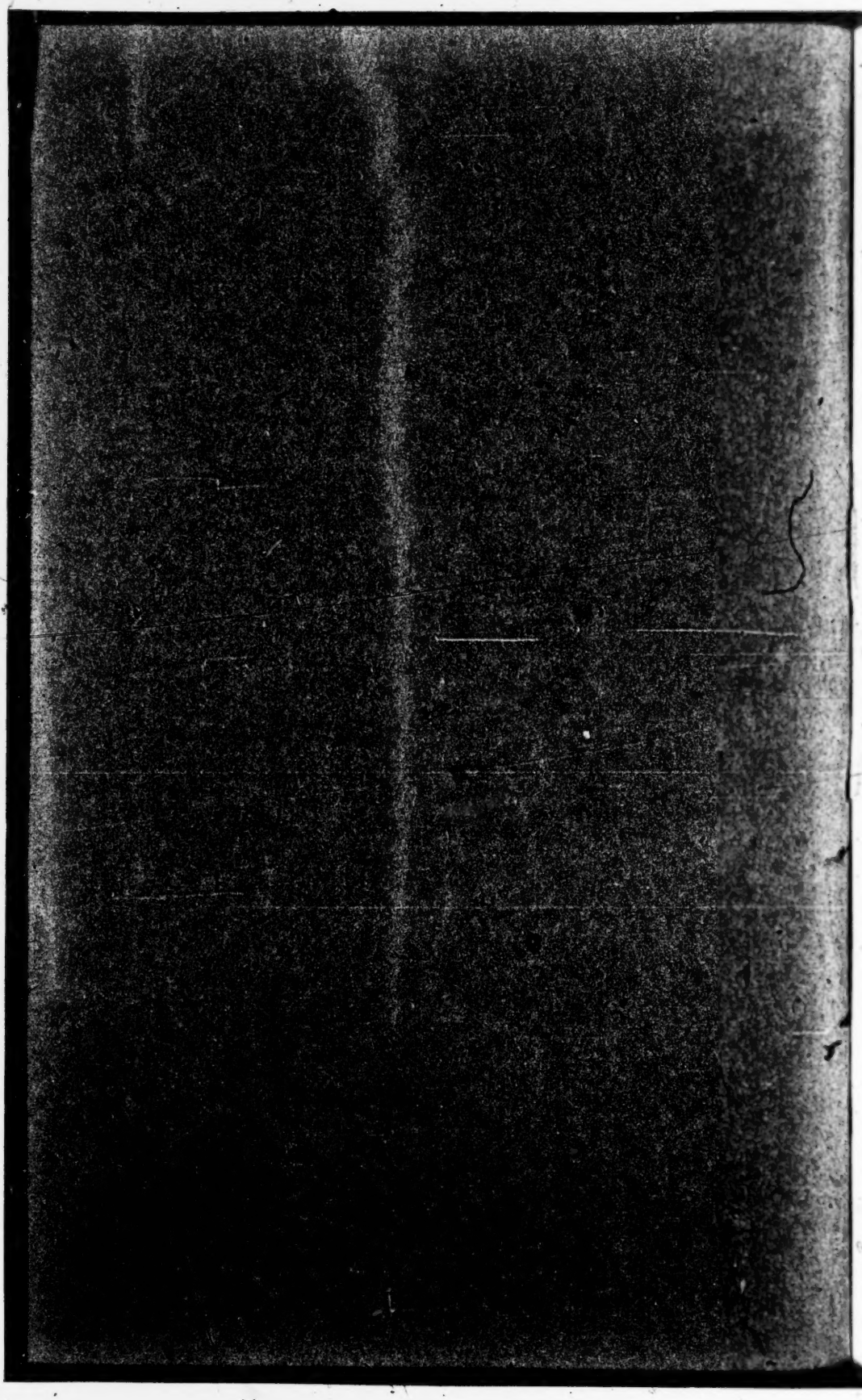
vs.

TRIPLEX SAFETY GLASS COMPANY OF NORTH AMERICA

ON WRITS OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE THIRD CIRCUIT

PETITION FOR CERTIORARI FILED FEBRUARY 21, 1936.

CERTIORARI GRANTED MARCH 30, 1936.



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ON WRITS OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE THIRD CIRCUIT

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JUDD & DETWEILER (INC.), PRINTERS, WASHINGTON, D. C., APRIL 3, 1936.

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[fol. 1]

IN UNITED STATES DISTRICT COURT, WESTERN DISTRICT OF PENNSYLVANIA

In Equity. No. 2295

TRIPLEX SAFETY GLASS COMPANY OF NORTH AMERICA

v.

PITTSBURGH SAFETY GLASS COMPANY, Name Changed to DUPLATE CORPORATION and PITTSBURGH PLATE GLASS COMPANY

DOCKET ENTRIES

Dec. 31, 1928. Bill of Complaint filed.
Dec. 31, 1928. Subpoena issued.
Jan. 4, 1929. Subpoena returned served by handing to and leaving a true and attested copy with H. B. Higgins, Secretary of Pittsburgh Safety Glass Co. at Pittsburgh, Pa., on Jan. 3, 1929.
Jan. 9, 1929. Stipulation filed extending time for defendant to file its answer to and including March 4, 1929.
Mar. 4, 1929. Answer filed.
May 23, 1929. On motion of plaintiff, Interrogatories filed by leave of Court.
May 23, 1929. Copy of interrogatories mailed to Christy & Christy.
June 27, 1929. Defendant's answers to Interrogatories filed by plaintiff.

[fol. 2]

June 27, 1929. Copy of Answer mailed to Brown & Critchlow .
June 29, 1929. Motion for more particular statement of the nature of plaintiff's claim filed and order entered directing plaintiff to answer the foregoinf within ten days from this date.

DOCKET ENTRIES—Continued

July 11, 1929. Plaintiff's bill of particulars filed.
Sept. 3. 1929. Hearing before Schoonmaker, J.
Sept. 16, 1929. Stipulation as to certain facts and exhibits filed.
Nov. 16, 1929. Opinion filed and entered concluding that said patent is valid and has been infringed; the plaintiff is entitled to the relief prayed for; let a decree be submitted accordingly.
Dec. 9, 1929. Decree filed and entered adjudging that Letters Patent No. 1,182,739, are good and valid, and the property of the plaintiff; that the defendant has infringed on said patent; that the defendant be enjoined from further infringement; that the plaintiff recover for its costs, damages etc; that the case be referred to G. Dixon Shrum as Special Master for an accounting.
Dec. 9, 1929. Stipulation changing the name of the defendant on record from Pittsburgh Safety Glass Company to Duplate Corporation filed by Order of Court.
Dec. 9, 1929. On petition of defendant, Order entered allowing an appeal.

[fol. 3]

Dec. 9, 1929. Assignments of error attached.
Dec. 9, 1929. Order of Court filed and entered suspending the injunction pending appeal, upon the defendant filing a bond in the sum of $50,000.00.
Dec. 9, 1929. Citation mailed to C. C. of Appeals.
Dec. 10, 1929. Appeal bond approved by the Court and filed.
Jan. 9, 1930. Order of Court filed and entered extending time for defendant to file transcript of record in the U. S. Circuit Court of Appeals to Feb. 20, 1930.
July 17, 1930. Copy of Opinion of C. C. of Appeals received and filed.

DOCKET ENTRIES—Continued

Aug. 18, 1930. Mandate received from Circuit Court of peals affirming the decision of this Court with costs; Triplex Safety Glass Co. to recover against the said Duplate Corp. the sum of $20.00 for its costs expended herein.

Aug. 19, 1930. Injunction order filed and entered directing that injunction carried by the interlocutory decree of Dec. 9, 1929 be issued forthwith.

Aug. 19, 1930. Permanent Injunction issued.

Aug. 28, 1930. Permanent Injunction returned service acknowledged by attorney for defendant.

Jan. 24, 1931. On motion of plaintiff, rule granted on defendant to show cause why it should not be adjudged in contempt of Court.

[fol. 4]

Jan. 24, 1931. Affidavit of Arthur W. Thomas filed.

Jan. 24, 1931. Affidavit of Willard L. Morgan, with exhibits, filed.

Feb. 14, 1931. Defendant's motion to discharge rule to show cause why it should not be adjudged in Contempt filed.

Feb. 24, 1931. Affidavits for defendant sur proceedings for contempt filed.

Feb. 28, 1931. Rebuttal Affidavit of Willard L. Morgan filed.

Mar. 3, 1931. Hearing on motion to discharge rule granted Jan. 24, 1931, before Schoonmaker, J.—Motion denied.

Mar. 3, 1931. Hearing on rule for contempt—argued C. A. V.

Mar. 13, 1931. Opinion filed and entered denying plaintiff's motion to adjudge defendant in contempt; an order to be submitted.

May 13, 1931. Transcript of testimony filed.

Oct. 7, 1931. Notice and motion for leave to file supplemental bill filed.

Oct. 7, 1931. Supplemental bill of complaint filed by leave of Court.

Oct. 7, 1931. Subpœna issued.

DOCKET ENTRIES—Continued

Oct. 8, 1931. Subpœna returned served on Marshall A. Christy, attorney who accepted service for both defendants at Pittsburgh, Pa., on October 8, 1931.

Oct. 21, 1931. Answer of Pittsburgh Plate Glass Co. filed to Supplemental Bill of Complaint.

[fol. 5]

Dec. 5, 1931. Interlocutory decree upon supplemental bill and answer filed and entered adjudging, that Pittsburgh Plate Glass Co. has jointly with Duplate Corp. infringed Letters Patent No. 1,182,739; that a perpetual injunction issue against said Pittsburgh Plate Glass Co.; that the plaintiff recover from said defendant its damages; that this matter be referred to G. Dixon Shrum, Special Master; that the defendant pay the costs.

Dec. 16, 1931. Order of Court filed and entered releasing the surety on the bond filed Dec. 10, 1929.

Jan. 26, 1932. Præcipe for appearance of Smith, Buchanan, Scott & Gordon for defendants filed.

Apr. 20, 1932. Petition of defendant to sustain exceptions; certificate of Special Master; and renewal of defendants exceptions filed.

Apr. 23, 1932. Answer of plaintiff to petition of defendant filed.

June 10, 1932. Opinion sur defendant's application for review of an incidental ruling of Special Master filed; order to be submitted.

June 22, 1932. Order of Court filed and entered denying without prejudice the application of the Pittsburgh Plate Glass Co. for a review of the incidental ruling of the Special Master; they to file exceptions to the whole or any part of any final report of the master.

[fol. 6]

Oct. 21, 1932. Defendants petition with respect to production and examination of certain books and records of plaintiff filed.

DOCKET ENTRIES—Continued

Oct. 21, 1932. Opinion filed and entered denying defendant's petition; without prejudice, to the right of defendant's to raise the same question by exception to the Master's report—an order may be submitted accordingly.

Oct. 31, 1932. Order of Court filed and entered denying defendant's motion, directing the plaintiff to produce its books and records, without prejudice, to the right of defendants to raise the same question by exception to the Masters final report.

Jan. 12, 1934. Report of Special Master sur account filed.

Jan. 18, 1934. Proof of service of notice of return of Masters report to Clerks office, filed.

Jan. 31, 1934. Defendant's exceptions to Master's report filed.

Feb. 1, 1934. Plaintiffs exceptions to masters report filed.

Mar. 27, 1934. Notice to defendants that motion are to be presented filed.

Apr. 3, 1934. Motion to dismiss plaintiffs exception to the report of the master filed.

Apr. 3, 1934. Argued before Schoonmaker, J. C. A. V.

[fol. 7]

Apr. 3, 1934. Trial memo filed.

May 1, 1934. Opinion filed and entered over-ruling exceptions to Master's report, and confirming same absolutely; assessing costs of accounting against defendant-, allowing interest on the award of damages from the day infringement ceased; Decree to be submitted.

May 25, 1934. Plaintiff's bill of costs filed.

June 28, 1934. Supplemental opinion filed and entered sustaining defendants' exception No. 11 to the extent of the award of $2807.89 as specific damages due to reduced selling price, in addition to award of a reasonable royalty.

DOCKET ENTRIES—Continued

July 2, 1934. Final decree filed and entered overruling plaintiff's exceptions to the Master's report, defendants exceptions to the Master's report is confirmed absolutely; plaintiff's motion to assess interest at the rate of 6% per annum from the date the infringement ceased is hereby granted; plaintiff to recover from dedefendants its costs in the amount of $8332.25; plaintiff to have judgment in the total amount of $523,912.52, with interest at 6% per annum until paid.

Aug. 2, 1934. On motion of plaintiff order entered directing that opinion dated May 1, 1934, supplemental opinion dated June 28, 1934

[fol. 8] Special master's Findings of fact & conclusions of law, as set forth in Findings of fact numbered 1-26 and conclusions of law numbered 1-18 dated Jan. 12, 1934 except Special Master's Conclusion of law 17, be adopted as Findings of Fact & Conclusions of law in conformity with Equity rule #70½.

Aug. 27, 1934. On motion of plaintiff, order entered directing matter to be adopted as Findings of Fact and Conclusions of law in above case—defendant- except, exception noted and Billed sealed.

Sept. 6, 1934. On petition of Duplate Corporation and Pittsburgh Glass Co. order entered allowing appeal.

Sept. 6, 1934. Assignments of Error filed.

Sept. 6, 1934. Citation issued returnable Oct. 6, 1934.

Sept. 6, 1934. Stipulation filed and order entered waiving the filing of appeal cost bond of each party.

Sept. 17, 1934. On petition of Triplex Safety Glass Co. order entered allowing appeal.

Sept. 17, 1934. Assignment of errors filed.

Sept. 17, 1934. Notice of appeal filed with acceptance of service thereon.

DOCKET ENTRIES—Continued

Sept. 18, 1934. Citation issued returnable Oct. 17, 1934.
Sept. 29, 1934. Petition of defendants re general contents of record on appeal filed with acceptance of service thereon.

[fol. 9]

Oct. 2, 1934. Plaintiff's answer to defendant's petition re contents of record on appeal filed.
Oct. 3, 1934. Stipulation re contents of record on appeal and order approving same filed.
Oct. 3, 1934. Order (on defendants' petition of Sept. 29, 1934) directing that master's Exhibit 32 for identification shall not be included in the appeal record; exception noted to the plaintiff.

[fol. 10] IN UNITED STATES DISTRICT COURT FOR THE WESTERN DISTRICT OF PENNSYLVANIA

In Equity. No. 2295

TRIPLEX SAFETY GLASS COMPANY OF NORTH AMERICA,
Plaintiff,

v.

PITTSBURGH SAFETY GLASS COMPANY, Defendant

BILL OF COMPLAINT—Filed December 31, 1928

To the Honorable Judges of the District Court of the United States for the Western District of Pennsylvania:

The plaintiff, Triplex Safety Glass Company of North America, complaining of the defendant, alleges:

First. That the plaintiff, Triplex Safety Glass Company of North America, is a corporation of the State of Delaware and has its principal office in Clifton, in the State of New Jersey; that the defendant, Pittsburgh Safety Glass Company, is a corporation of the State of Delaware and has its principal office and regular and established place of business in the City of Pittsburgh, in the State of Pennsyl-

vania, within the Western Judicial District of Pennsylvania at which place and within which district, as well as elsewhere in the United States the acts hereinafter complained [fol. 11] of as infringements have been and are being done by said defendant.

Second. That this is a suit in equity arising under the Patent Laws of the United States, for infringement of Letters Patent of the United States No. 1,182,739.

Third. That on and prior to the fourteenth day of June, 1911, Edouard Benedictus, then a citizen of France, was within the meaning of the Statutes of the United States then in force, the first, sole, true and original inventor of certain new improvements in manufacture of strengthened glass, not known or used by others in this country and not patented or described in any printed publication in this or any foreign country before his invention or discovery thereof, or more than two years prior to his application for letters patent therefor, and no application for any foreign patent having been filed more than twelve months prior to the filing of the application for letters patent in this country, and which improvements had not been in public use or on sale in the United States for more than two years prior to his said application for letters patent therefor, and not abandoned to the public.

Fourth. That on the fourteenth day of June, 1911, the said Edouard Benedictus made and filed an application in writing to the Commissioner of Patents for the grant of letters patent upon the said invention or discovery of improvements in manufacture of strengthened glass, said application bearing No. 633,128; that on the ninth day of May, 1916, all the requirements of the Statutes of the United States then in force having been complied with, Letters Patent of the United States No. 1,182,739, for improvements in manufacture of strengthened glass, was duly [fol. 12] issued on the said application to said Edouard Benedictus; that said letters patent was issued in due form of law in the name of the United States of America under the seal of the United States Patent Office, signed by the Commissioner of Patents, duly recorded and delivered to the said Edouard Benedictus, and was so issued after due examination as to the novelty, patentability and utility of the inventions therein described and payment of the fees

required by law; and that the said letters patent granted to the said Edouard Benedictus, his heirs, legal representatives or assigns, for the full term of seventeen years from the date thereof, the full and exclusive right and liberty to make, use and sell the inventions set forth, described and claimed therein throughout the United States and territories thereof.

Fifth. That the plaintiff is the sole and exclusive owner of the entire right, title and interest in and to Letters Patent of the United States for manufacture of strengthened glass, No. 1,182,739, dated May 9, 1916, and granted to Edouard Benedictus, and is the exclusive owner of the entire right, title and interest in and to all damages and profits recoverable at law or in equity for any and every infringement of said letters patent and in and to all claims and demands for such damages and profits by virtue of certain instruments in writing duly executed and recorded in the United States Patent Office, as by the said instruments in writing or by duly certified copies thereof, ready in court to be produced by the plaintiff as your Honors shall direct, will more fully appear.

Sixth. That the said improvements in manufacture of strengthened glass shown, described and claimed in said Letters Patent of the United States, No. 1,182,739, have been and are of great practical use and benefit to the plain-
[fol. 13] tiff and to the public; that the plaintiff has invested and expended large sums of money and has been to great trouble and expense for the purpose of introducing the same into public use and making the same profitable to it and useful to the public; that said improvements have been favorably known throughout the United States; that the public has generally acknowledged and acquiesced in the value and utility of said improvements and has generally acknowledged and acquiesced in the rights secured to the plaintiff by the said letters patent; and that the plaintiff believes that it will realize and receive large gains and profits from the said improvements if it shall receive the equitable relief prayed for in this bill of complaint.

Seventh. That the plaintiff has given notice to the public that strengthened glass embodying the improvements shown, described and claimed in said Letters Patent of the United States, No. 1,182,739, is patented by affixing to

each piece of such glass made, sold and used by it since the issuance of said Letters Patent of the United States and embodying the said improvements the word "Patented" or a proper abbreviation thereof, together with the date of said letters patent; that the plaintiff has strictly complied with the requirements of Section 4900 of the Revised Statutes of the United States in such cases made and provided; that the plaintiff has notified the defendant in writing and otherwise that the improvements shown, described and claimed in said Letters Patent No. 1,182,739 are patented and that the defendant is violating the exclusive rights acquired by and secured to the plaintiff under said letters patent; and that the defendant is committing the infringing acts herein complained of with full knowledge of plaintiff's rights.

[fol. 14] Eighth. That at divers times between the date of granting of said Letters Patent No. 1,182,739 and of the filing of this bill of complaint and within six years prior to the filing of this bill of complaint, the defendant, well knowing the facts hereinbefore set forth, but contriving to injure the plaintiff and to deprive it of the profits and advantages which might and otherwise would accrue to it from said Letters Patent of the United States, No. 1,182,739, and from the several improvements therein described and claimed, has been and now is making and selling strengthened glass embodying the improvements therein described and claimed in said Letters Patent of the United States, No. 1,182,739; in the City of Pittsburgh, in the State of Pennsylvania, within the Western District of Pennsylvania, and elsewhere within the United States, all without any license or allowance of the plaintiff and against the will of the plaintiff and in violation of its exclusive rights under the said Letters Patent of the United States, No. 1,182,739; and that the defendant, as the plaintiff is informed and believes, intends and threatens to continue to make and sell strengthened glass embodying the improvements described and claimed in said Letters Patent of the United States No. 1,182,739, in the City of Pittsburgh, in the State of Pennsylvania, within the Western District of Pennsylvania, and elsewhere within the United States, without any license or allowance of the plaintiff and in defiance of the exclusive rights acquired by and secured to the plaintiff under said Letters Patent of the United

States, No. 1,182,739; that by reason thereof the plaintiff has been and is being deprived of great gains and profits which might and otherwise would have been obtained by it, but which have been and are now being received and enjoyed by the defendant by and through its said unlawful [fol. 15] acts and doings, to the great and irreparable loss and injury of the plaintiff; that said unlawful acts and doings of the defendant and its disregard and defiance of the exclusive rights of the plaintiff, as aforesaid, have the effect to and do encourage others to infringe said Letters Patent of the United States, No. 1,182,739, and to disregard the exclusive rights of the plaintiff thereunder; and that the plaintiff is unable to state how much strengthened glass embodying the improvements described and claimed in said Letters Patent of the United States, No. 1,182,739, the defendant has made or has caused to be made and sold, or caused to be sold, as aforesaid, but is informed and believes and therefore avers that the defendant has made and sold strengthened glass in the City of Pittsburgh, in the State of Pennsylvania, within the Western District of Pennsylvania, and elsewhere within the United States, in infringement of said Letters Patent of the United States, No. 1,182,739, and prays a discovery thereof.

Wherefore the plaintiff prays:

1. That the defendant be compelled to account for all strengthened glass embodying any of the improvements described and claimed in said Letters Patent of the United States No. 1,182,739, which it has manufactured or sold or caused to be manufactured or sold in the City of Pittsburgh, in the State of Pennsylvania, within the Western District of Pennsylvania, and elsewhere within the United States, in infringement of said Letters Patent of the United States, No. 1,182,739.

2. That the defendant be compelled to account for and pay to the plaintiff all profits, gains and savings by it acquired and the actual damages suffered by the plaintiff from the infringement by the defendant of said Letters Patent of the United States No. 1,182,739.

[fol. 16] 3. That the defendant and its officers, agents, servants, attorneys, employees, and each of them may be restrained from any further violation of the exclusive

rights of the plaintiff under and from infringement of said Letters Patent of the United States, No. 1,182,739.

4. That the defendant may be decreed to pay the costs of this suit.

5. The plaintiff further prays for a writ of injunction issuing from and under the seal of this Honorable Court perpetually enjoining and restraining the defendant and its officers, agents, servants, attorneys and employees from further making or selling or causing to be made or sold any strengthened glass embodying any of the improvements described and claimed in Letters Patent of the United States No. 1,182,739, in violation of the exclusive rights of the plaintiff hereunder and in infringement of said Letters Patent of the United States, No. 1,182,739.

6. And plaintiff further prays that a provisional or preliminary injunction be issued restraining the defendant from any further infri[illegible]t of said Letters Patent of the United States, No. [illegible]82,739.

7. And plaintiff further prays for a writ of subpœna ad respondendum issuing out of and under the seal of this Honorable Court directing the defendant and commanding it, on a day certain therein to be named, to appear and to answer this bill of complaint (but not under oath, an answer under oath being hereby expressly waived) and to abide by and perform such orders and decrees as to this Court shall seem meet and may be required by the principles of equity and good conscience.

[fol. 17] 8. And for such other and further relief as the circumstances of the case may require.

Triplex Safety Glass Company of North America,
by Amory L. Haskell, President.

Attest: Starr Cooper, Secretary. William B. Greeley, Drury W. Cooper, New York, of Counsel for Plaintiff. (Seal.) Brown & Critchlow, 1526 Farmers Bank Bldg., Pittsburgh, Pa., Solicitors for Plaintiff.

Duly sworn to by Amory L. Haskell. Jurat omitted in printing.

[fol. 18] IN UNITED STATES DISTRICT COURT

DEFENDANT'S ANSWER—Filed March 4, 1929

I. Defendant admits the corporate existence of the plaintiff as averred in paragraph first of the bill of complaint and it admits itself to be a corporation of the State of Delaware, having its principal office and regular and established place of business at Pittsburgh, Pennsylvania, but it denies that it has committed any act of infringement within the Western District of Pennsylvania or elsewhere.

II. With respect to the averments of paragraphs third and fourth of the bill of complaint, defendant admits the issue of letters patent therein named, No. 1,182,739, to Edouard Benedictus, but it denies that the said letters patent were lawfully issued, as well as that there was thereby granted to the said Edouard Benedictus, his heirs, [fol. 19] legal representatives or assigns, any exclusive right or liberty, and it denies all the other averments contained in said paragraphs third and fourth.

III. As to the averments of paragraph fifth of the bill of complaint, defendant is without knowledge.

IV. As to the averments of paragraph sixth of the bill of complaint, defendant is without knowledge.

V. Whether or not the plaintiff has marked strengthened glass manufactured and sold by it, and alleged to embody the alleged improvements of the said letters patent, as "patented," as averred in paragraph seventh of the bill of complaint, defendant is without knowledge. Defendant admits that prior to the filing of the bill of complaint it was notified of the said letters patent and of its alleged infringement thereof, but it denies that it has committed any infringing acts either before or after such notice.

VI. Defendant denies that at any time it has made or sold, is now making or selling, or intends to make or sell any strengthened glass embodying any of the alleged improvements purporting to be described and claimed in the said letters patent, within the Western District of Pennsylvania or elsewhere, and it denies each and all of the averments of paragraph eighth of the bill of complaint.

VII. Defendant denies that Edouard Benedictus, in said bill of complaint named, was the true, original and first inventor of any of the alleged improvements purporting to be set forth in the said Letters Patent No. 1,182,739, or of any material or substantial part thereof; on the contrary, defendant avers the fact to be, that prior to the pretended invention thereof by the said Bénedictus, and for more than two years prior to the date of his application for the said [fol. 20] letters patent, the said alleged improvements, in all material and substantial parts, had been known and used in this country, and had been patented and described in printed publications in this and foreign countries, as is disclosed in and by the following:

United States Letters Patent

No. 346,864, dated August 3d, 1886, to Read.
No. 610,861, dated September 13th, 1898, to Goodwin.
No. 765,275, dated July 19, 1904, to Fields.
No. 830,398, dated September 4th, 1906, to Wood.

English Letters Patent

No. 3250 of 1873, to Holyaoke.
No. 5080 of 1884, to Cunliffe.
No. 15303 of 1884, to Fulticks.
No. 17126 of 1900, to Hofer.
No. 9972 of 1905, to Wood.

French Letters Patent

No. 356,076 of 1905, to Wood.
No. 404,795, of 1909, to Soulier.

VIII. Defendant, in further denial of invention by the said Benedictus of any of the said alleged improvements, avers that in view of the state of the art as it existed at and prior to his application for the said letters patent, and at and prior to his pretended invention thereof, the said alleged improvements did not, nor did any of them, constitute, contain or embody any patentable subject matter. In proof of such prior state of the art, defendant will refer, among other matters, to the prior letters patent listed in the last preceding paragraph.

IX. Defendant, further answering, avers that the description or specification filed by the said Benedictus in the [fol. 21] Patent Office, in making his application for the said letters patent, was defective and misleading and did not set forth the manner and process of making, constructing, compounding and using his said alleged improvements in sufficiently full, clear and exact terms as to enable a person skilled in the art to which they appertain to make, construct, compound and use the same.

XI. Defendant, further answering, avers that for the purpose of deceiving the public, the description or specification filed by the said Benedictus in the Patent Office, in making his application for the said letters patent, was made to contain less than the whole truth relative to his pretended invention or discovery.

XII. Defendant denies the equity of the said bill of complaint; it denies that the plaintiff has any right to any injunction, preliminary or perpetual, or to any accounting of damages or profits, or to the costs of this suit, or to any relief whatever against this defendant; and it further denies that the said bill of complaint states any good cause of action. All of which matters and things defendant is ready to prove and maintain as this Honorable Court shall direct, and it humbly prays that it be hence dismissed with its reasonable costs and charges in this behalf most wrongfully sustained.

Christy & Christy, Solicitors for Defendant. James C. Bradley, C. H. Biesterfeld, Marshall A. Christy, Of Counsel.

[fol. 22] IN UNITED STATES DISTRICT COURT

STIPULATION AS TO CHANGE OF NAME—Filed December 9, 1929

It is hereby stipulated by and between the solicitors for the respective parties to the above-entitled suit that the name of the defendant was changed pursuant to provisions of the laws of the State of Delaware from "Pittsburgh Safety Glass Company" to "Duplate Corporation" subsequent to the filing of the bill of complaint herein, and may be changed of record in this case to Duplate Corporation,

and that an order to the foregoing effect may be entered without further notice to either party.

Brown & Critchlow, Solicitors for Plaintiff. Marshall A. Christy, Solicitor for Defendant.

ORDER

And now, this ninth day of December, 1929, it is so ordered.

F. P. Schoonmaker, United States District Judge.

[fol. 23] IN UNITED STATES DISTRICT COURT

[Title omitted]

ORDER AS TO SUPPLEMENTAL BILL OF COMPLAINT—Filed October 7, 1931

This case came on to be heard on plaintiff's motion for leave to file the attached supplemental bill, and, counsel for defendants not objecting thereto, it is

Ordered that said supplemental bill be filed.

F. P. Schoonmaker, United States District Judge.

October 7, 1931.

Counsel for the defendants' Pittsburgh Plate Glass Company and Duplate Corporation does not object to the entry of the attached order granting leave to Triplex Safety Glass Company of North America to file a supplemental bill against Duplate Corporation and Pittsburgh Plate Glass Company in the cause now pending before this Court and marked in Equity as No. 2295.

Dated October 6, 1931.

Marshall A. Christy, Appearing Specially Only for Pittsburgh Plate Glass Company.

[fol. 24] IN UNITED STATES DISTRICT COURT

SUPPLEMENTAL BILL OF COMPLAINT—Filed October 7, 1931

To the Honorable the Judges of the District Court of the United States for the Western District of Pennsylvania:

The Triplex Safety Glass Company of North America, a corporation incorporated under the laws of the State of Delaware, having its principal office in Clifton, in the State of New Jersey, the plaintiff in the original bill of complaint filed in this cause against Duplate Corporation, by way of supplement to said original bill of complaint, with leave of Court first had and obtained, files this its supplemental bill of complaint in this cause against Pittsburgh Plate Glass Company, and alleges as follows:

First. That Pittsburgh Plate Glass Company is a corporation of the State of Pennsylvania, having its principal office and place of business in the City of Pittsburgh, in the State of Pennsylvania and is an inhabitant and resident of the Western District of Pennsylvania.

Second. On information and belief that Dupont Viscaloid Company is a corporation of the State of Delaware, having its principal office in the City of Wilmington, in the State of Delaware and is not an inhabitant or resident of the Western District of Pennsylvania and therefore is not made a party hereto because it is not within the jurisdiction of this Honorable Court.

Third. That Duplate Corporation is a corporation of Delaware having an office and a regular and established place of business in the City of Pittsburgh, in the State of [fol. 25] Pennsylvania, within the Western District of Pennsylvania and is made a party hereto because it is the defendant named in the original bill, but no other or further relief is prayed for herein against Duplate Corporation than the relief prayed against it in said original bill of complaint.

Fourth. That this is a supplemental suit in equity arising under the Patent Laws of the United States for the infringement of Letters Patent of the United States No.

1,182,739, dated May 9, 1916 and granted to Edouard Benedictus.

Fifth. That heretofore and on or about the thirty-first day of December, 1928, plaintiff filed its original bill of complaint in this Honorable Court against the defendant, Duplate Corporation, in which original bill of complaint plaintiff charged infringement of claim 12 of said Letters Patent of the United States No. 1,182,739 and prayed for an injunction and accounting for damages and profits, all of which is more particularly set forth in said original bill of complaint filed in the office of the clerk of this court on the thirty-first day of December, 1928, to which the plaintiff begs leave to refer with the same effect as if the same were set forth here in full; that defendant, Duplate Corporation, duly filed its answer in this Court on March 4, 1929; that the issues thus joined by the original bill of complaint and defendant's answer thereto, came on to be heard before the Honorable F. P. Schoonmaker, United States District Judge of this court; that an interlocutory decree was entered therein on December 9, 1929, adjudging said United States Letters Patent No. 1,182,739 valid and infringed by the defendant, Duplate Corporation, and enjoining said defendant, Duplate Corporation, from further infringement of said letters patent and ordering an accounting before G. Dixon Shrum, Esq., as Special Master, to determine the [fol. 26] damages and profits arising out of the defendant, Duplate Corporation's, infringement; that defendant, Duplate Corporation, appealed from said decree to the Circuit Court of Appeals for the Third Circuit; that said appeal was heard and that said decree was in all respects affirmed by the said Circuit Court of Appeals for the Third Circuit; that thereafter the hearings on the accounting before the said G. Dixon Shrum, Esq., were commenced on May 11, 1931, continued from time to time and are still pending.

Sixth. Plaintiff further avers that at such hearings before said Special Master, plaintiff first learned the following facts which were unknown and could not by reasonable diligence have been known to it or to any of its officers or directors before such hearings:

On or about December 14, 1927, said Pittsburgh Plate Glass Company, and said Dupont Viscaloid Company, en-

tered into a written agreement, the pertinent parts of which are hereinafter summarized.

The agreement recites that the parties thereto (Pittsburgh Plate Glass Company and Dupont Viscaloid Company) "desire to enter into a joint enterprise having for its object the manufacture and sale of non-splintering glass"; that the parties will cause to be incorporated a Delaware corporation referred to in said agreement as "Glass Company" which shall have a $1,000,000 authorized capital stock; that each of the parties will subscribe $100,000 of the authorized issue and also will subscribe for the balance of said capital stock when and as it may be required; that Pittsburgh Plate Glass Company and Dupont Viscaloid Company would always vote their respective stockholdings in such manner that three of the six members of the board of directors of the proposed Glass Company would be representatives of Pittsburgh Plate Glass Com- [fol. 27] pany and the remaining three would be representatives of Dupont Viscaloid Company; that the board of directors of the proposed Glass Company would vote at meetings of such board so that the president and general manager of the Glass Company should always be representatives of the Pittsburgh Plate Glass Company and that the chairman of the board of directors of the Glass Company should always be a representative of the Dupont Viscaloid Company. The agreement also contains various provisions relating to the lease or acquisition of a plant site, the erection of a plant, the number of directors and the manner of electing them; that the Glass Company shall have the non-exclusive right to use patents, formulæ, processes and inventions owned by Dupont Viscaloid Company and/or Pittsburgh Plate Glass Company free from the payment of any royalty; that upon the acquisition of any United States or foreign patents by either Dupont Viscaloid Company or Pittsburgh Plate Glass Company, the proposed corporation shall be notified and shall have certain rights to acquire such patents, or acquire rights thereunder; that the certificate of incorporation shall be acceptable to counsel for the Dupont Viscaloid Company and counsel for the Pittsburgh Plate Glass Company; that the Dupont Viscaloid Company and Pittsburgh Plate Glass Company agree not to sell, assign or hypothecate their respective stockholdings in the proposed company without first offering them to each other; that to the end that the Pittsburgh Plate

Glass Company and the Dupont Viscaloid Company shall have and enjoy the maximum benefits and profits from the joint undertaking, the proposed company shall purchase from the Dupont Viscaloid Company all pyroxylin plastics and from the Pittsburgh Plate Glass Company all polished plate glass and/or window glass and from either or both [fol. 28] all other basic materials which shall be needed or used in the business of the proposed company.

Seventh. Plaintiff further avers that on December 28, 1927, pursuant to said agreement, Pittsburgh Plate Glass Company, acting in conjunction with Dupont Viscaloid Company caused to be organized under the laws of the State of Delaware, Pittsburgh Safety Glass Company, the name of which was subsequently changed to Duplate Corporation, constituting the joint enterprise provided for in said agreement of December 14, 1927.

Eighth. That the board of directors of said joint enterprise, now known as Duplate Corporation, consisted of six members, three of whom were members of the board of directors of Pittsburgh Plate Glass Company and the remaining three were members of the board of directors of Dupont Viscaloid Company; that the president of said joint enterprise was the president of Pittsburgh Plate Glass Company and the chairman of the board of directors of said joint enterprise was the president of Dupont Viscaloid Company.

That during the first few months of the existence of said joint enterprise, now known as Duplate Corporation, the printed order forms of Pittsburgh Plate Glass Company were used as the printed order forms of Duplate Corporation; that the printed records and forms of Pittsburgh Plate Glass Company designated said joint enterprise, now known as Duplate Corporation, as "The Laminated Glass Department" of Pittsburgh Plate Glass Company; that said joint enterprise, now known as Duplate Corporation, used as its general offices the general offices of Pittsburgh Plate Glass Company without the payment of any rental therefor; that the bookkeepers employed and paid by Pitts- [fol. 29] burgh Plate Glass Company made entries in and in other respects kept the books of said joint enterprise, now known as Duplate Corporation; that for the period of more than a year after the said joint enterprise, now known

as Duplate Corporation, commenced business, the said joint enterprise occupied a part of one of the factories of Pittsburgh Plate Glass Company, free from the payment of any rental therefor; that the Pittsburgh Plate Glass Company granted preferential prices for plate glass to said joint enterprise, now known as Duplate Corporation, said preferential prices being substantially under the market price charged other and unrelated customers; that the officers and employees of Pittsburgh Plate Glass Company and particularly those in charge of the sales department of Pittsburgh Plate Glass Company, determined and established the prices to be charged by said joint enterprise, now known as Duplate Corporation, for its product; that the Pittsburgh Plate Glass Company, under the nominal title of "Sales Agent" sold the product of said joint enterprise, now known as Duplate Corporation, to the consumers thereof; that the joint enterprise, now known as Duplate Corporation, paid a selling commission to Pittsburgh Plate Glass Company and that the amount of that selling commission was the subject of an agreement, verbal or otherwise, between the Pittsburgh Plate Glass Company and Dupont Viscaloid Company; that the prices charged the consumers of the strengthened glass manufactured and sold by said joint enterprise, now known as Duplate Corporation, were not only subject to secret rebate agreements between Pittsburgh Plate Glass Company and some of said consumers, but the Pittsburgh Plate Glass Company instituted a cut-price policy and in other respects so negligently and recklessly conducted the business of said joint enter-
[fol. 30] prise, now known as Duplate Corporation, that not only the original investment of $1,000,000 in said joint enterprise, but also the profits earned by said joint enterprise, now known as Duplate Corporation, have been wasted and dissipated with the result that on the face of the accounting heretofore filed by the said Duplate Corporation with the Special Master appointed herein, the said joint enterprise, now known as Duplate Corporation, is now insolvent; that in or about February 1931 Pittsburgh Plate Glass Company, either through a stock purchase from said Dupont Viscaloid Company, or otherwise, acquired all of the issued capital stock and through such stock ownership is now the owner of all the assets of said joint enterprise, now known as Duplate Corporation.

Ninth. This plaintiff further avers that Pittsburgh Plate Glass Company has since on or about December 28, 1927, caused to be carried on the manufacture of the strengthened glass complained of in the original bill of complaint filed herein and decreed by this Court to be an infringement of said United States Letters Patent No. 1,182,739, and that Pittsburgh Plate Glass Company instigated, initiated and contributed to the said infringing manufacture of said strengthened glass for its own private profit, benefit and advantage and to that end caused to be incorporated the joint enterprise, now known as the Duplate Corporation, in an attempt to carry on said infringing manufacture, or cause the same to be carried on without subjecting itself to liability therefor; that at all times since December 28, 1927, said Pittsburgh Plate Glass Company, as one of the parties to the joint enterprise, now known as Duplate Corporation, had and now has the power to control, and did and now does control and operate said joint enterprise, now known as the Duplate Corporation.

[fol. 31] Tenth. This plaintiff further avers that the said joint enterprise, now known as Duplate Corporation, is not able to and/or will not be able to respond or pay any damages or profits which may be awarded against it and that the decree heretofore entered in the original suit against the Duplate Corporation, awarding the plaintiff a perpetual injunction and profits and damages, is not and will not be effective unless this Court also directs that a perpetual injunction issue against the said defendant, Pittsburgh Plate Glass Company and unless this court also directs that said Pittsburgh Plate Glass Company is responsible for and must pay to this plaintiff the profits which have accrued to the said joint enterprise, Duplate Corporation, from the infringing of said Letters Patent of the United States, No. 1,182,739, as well as the damages suffered by the plaintiff by reason of the aforesaid infringing manufacture by the said joint enterprise, now known as Duplate Corporation; that this plaintiff, unless the relief hereinafter prayed for is granted will not be afforded a complete and adequate remedy and will not be protected in its exclusive rights and privileges in, to and under said Letters Patent of the United States No. 1,182,739, as decreed by this Court in the original suit herein.

Wherefore, plaintiff prays:

1. That a writ of subpœna ad respondendum issue out of and under the seal of this Honorable Court, directed to the defendant, Pittsburgh Plate Glass Company, and commanding it on a day certain therein to be named, to appear and answer this bill of complaint (but not under oath, an answer under oath being hereby expressly waived) and to abide by and perform such orders and decrees as to this Court shall seem meet and may be required by the principles of equity and good conscience.

[fol. 32] 2. That the defendant, Pittsburgh Plate Glass Company be adjudged responsible for the acts and doings of Duplate Corporation; and be compelled to account for and pay to the plaintiff all profits, gains and savings made by said Duplate Corporation and itself and the actual damages suffered by the plaintiff from the infringement by Duplate Corporation and Pittsburgh Plate Glass Company, of said Letters Patent of the United States No. 1,182,739.

3. That a writ of injunction issue from and under the seal of this Honorable Court perpetually enjoining and restraining the defendant, Pittsburgh Plate Glass Company, and each of its respective officers, agents, servants, attorneys and employees, from further making, selling or using, or causing to be made sold or used, or assisting others and particularly Duplate Corporation from making, selling or using, any strengthened glass embodying any of the improvements described and claimed in Letters Patent of the United States No. 1,182,739, in violation of the exclusive rights of the plaintiff thereunder and in infringement of said Letters Patent of the United States No. 1,182,739, as heretofore decreed by this Honorable Court.

4. That the plaintiff may have the benefit of the said original suit heretofore brought against the Duplate Corporation and may also have the benefit of all proceedings heretofore had therein against the defendant, Pittsburgh Plate Glass Company; and may have the same relief against the said Pittsburgh Plate Glass Company as plaintiff had or could have had against the said Duplate Corporation.

5. That the said Pittsburgh Plate Glass Company be decreed to pay the costs of this supplemental suit, as well as the costs of the original suit.

[fol. 33] 6. That this plaintiff have such other and further relief as the circumstances of the case may require.

Triplex Safety Glass Company of North America, by Sydney W. Caulfield, Vice-President. Brown & Critchlow, Attorneys for Plaintiff, 1526 Farmers Bank Building, Pittsburgh, Pennsylvania. William B. Greeley, Drury W. Cooper, Counsel.

Duly sworn to by Sydney W. Caulfield. Jurat omitted in printing.

[fol. 34] IN UNITED STATES DISTRICT COURT

ANSWER OF PITTSBURGH PLATE GLASS COMPANY—Filed October 21, 1931

The answer of Pittsburgh Plate Glass Company, joined herein as party defendant by supplemental bill of complaint, to the said supplemental bill of Triplex Safety Glass Company of North America, plaintiff.

I. Defendant admits the corporate existence and the respective domiciles of the respective corporations named in paragraphs first, second and third of said supplemental bill of complaint.

II. The averments of paragraph fifth of the said supplemental bill are admitted.

III. With respect to the averments of paragraph sixth of the said supplemental bill, this defendant admits that on or about December 14, 1927, it entered into a certain written agreement with Dupont Viscoloid Company, named in said supplemental bill, but denying the averments of the said paragraph sixth as therein made, this defendant refers to the said written agreement bearing date December 14, 1927, ready in court to be produced, as setting forth each and all of the provisions thereof.

IV. Defendant admits the averments of paragraph seventh of said supplemental bill.

V. Answering the averments of paragraphs eighth and ninth of the said supplemental bill, this defendant denies the same, excepting only such as may be comprehended within the following statement, which this defendant avers to be correct: As admitted in the last above paragraph IV, this defendant jointly with the said Dupont Viscoloid Company in said bill of complaint mentioned organized [fol. 35] and effected incorporation of the said Duplate Corporation in said supplemental bill mentioned, under the original name of Pittsburgh Safety Glass Company. Of the capital stock of said corporation this defendant owned one-half, and the said Dupont Viscoloid Company owned the other half. Such stock ownership continued until on or about January 1, 1931, at which time this defendant purchased the entire stock ownership of the said Dupont Viscoloid Company, and since said last mentioned date this defendant has been the owner of the entire capital stock of said Duplate Corporation. Prior to January 1, 1931, the operations of the said Duplate Corporation were controlled jointly by this defendant and the said Dupont Viscoloid Company. Since January 1, 1931, this defendant has been and is now in sole control of the operations of said Duplate Corporation. This defendant has not manufactured or used any so-called strengthened glass such as is mentioned in the said supplemental bill, but it has acted as selling agent and in that capacity only has sold the product of the said Duplate Corporation, receiving for its services a commission of a small percentage of the actual selling price.

This defendant denies each and every averment, in said bill of complaint contained or implied, as to any want of good faith, of concealment of relation, or desire or intent to avoid responsibility, in and about the organization and incorporation of the said Duplate Corporation, and in carrying on the business of the said Duplate Corporation in the manufacture and sale of its product, and it further denies that the business of the said Duplate Corporation was ever carried on as a branch or department of this defendant, or otherwise than as a distinct and separate business of the said Duplate Corporation, as in fact it was. On the contrary, this defendant avers the fact to be, that [fol. 36] the said Duplate Corporation was originally organized and incorporated, and has at all times since con-

tinued in business, in good faith and for valid and lawful commercial reasons. Defendant further denies that, except as hereinabove stated, it has manufactured, sold or used, or instigated, initiated, or contributed to any manufacture, sale or use, or caused to be carried on any manufacture, sale, or use, of any strengthened glass such as is described and claimed in Letters Patent No. 1,182,739, mentioned in said supplemental bill. And defendant further denies that at any time during the existence and operation of said Duplate Corporation the facts in this paragraph hereinbefore stated were unknown to the said plaintiff, as well as that they could not have been discovered by it by reasonable diligence.

VI. Defendant denies each and all of the allegations of fact and conclusions set forth in paragraph tenth of said supplemental bill.

This defendant denies the equity of the said bill of complaint; it denies that the plaintiff has any right to any injunction, preliminary or perpetual, or to any accounting of damages or profits or to the costs of this suit or to any relief whatever against this defendant; and it further denies that the said bill of complaint states any good cause of action.

Pittsburgh Plate Glass Company, by Christy, Christy & Wharton, Solicitors. Marshall A. Christy, James C. Bradley, of Counsel.

Pittsburgh, Pennsylvania, October 20, 1931.

[fol. 37] In United States District Court for the Western District of Pennsylvania

In Equity. No. 2295

Triplex Safety Glass Company of North America, Plaintiff,

v.

Pittsburgh Safety Glass Company, Defendant

Present: Honorable Frederic P. Schoonmaker, United States District Judge.

Interlocutory Decree—Filed December 9, 1929

This suit came on at this term of court and was tried on final hearing and argued and submitted by counsel for both

parties; and thereupon, upon consideration and determination thereof by this Court, it is

Ordered, Adjudged and Decreed as follows:

1. That letters patent named in the bill of complaint, to wit, Letters Patent of the United States No. 1,182,739, granted on May 9, 1916, on the invention of and to Edouard Benedictus for Manufacture of Strengthened Glass, is good and valid in law as to claim numbered 12 thereof and that title to said letters patent is vested in plaintiff, Triplex Safety Glass Company of North America.

2. That the defendant, Pittsburgh Safety Glass Company, has infringed upon the said Letters Patent of the [fol. 38] United States No. 1,182,739 as to claim numbered 12 thereof and has violated the exclusive rights of the plaintiff thereunder.

3. That a writ of injunction, in accordance with the prayer of the bill of complaint, directed to the defendant, Pittsburgh Safety Glass Company, be issued out of and under the seal of this Court perpetually enjoining and restraining defendant, Pittsburgh Safety Glass Company, its officers, agents, servants, attorneys and employees, from further making or selling or causing to be made or sold strengthened glass embodying the invention set forth and claimed in claim numbered 12 of said Letters Patent of the United States No. 1,182,739.

4. That the plaintiff recover from the defendant the profits, gains and advantages which the said defendant has received or made or which may have arisen or accrued to it by the manufacture and sale of strengthened glass in infringement upon and violation of the invention of claim numbered 12 of said Letters Patent of the United States No. 1,182,739.

5. That the plaintiff recover from the defendant the damages resulting to plaintiff from the infringement by the defendant of claim numbered 12 of said Letters Patent of the United States No. 1,182,739.

6. That this case be referred to G. Dixon Shrum, of Pittsburgh, Pa., as a Special Master of this court, who is hereby appointed to ascertain, take, state and report to the Court an account of the quantity of strengthened glass described and claimed in claim numbered 12 of said Letters

Patent of the United States No. 1,182,739 made, used or sold by defendant and also the gains, profits and advantages which the defendant has received or which have arisen [fol. 39] and accrued to it from infringement upon the said exclusive rights of plaintiff under said letters patent as to claim numbered 12 thereof, and also the damages which the plaintiff has suffered because of defendant's said infringement upon claim numbered 12 of said Letters Patent of the United States No. 1,182,739.

7. That the plaintiff on such accounting shall have the right to cause the examination of the officers, servants, agents and employees of defendant and also to examine other witnesses and to cause the production and examination of the books, vouchers, records and documents of the defendant and to have the necessary process of the Court to compel such attendance and production of books, vouchers, records and documents of defendant before the Master at such times and places as the Master shall from time to time direct.

8. That the plaintiff shall recover from the defendant the costs expended by it in this court and that it shall have judgment and execution of this court against the defendant for said costs.

F. P. Schoonmaker, United States District Judge.

[fol. 40] In United States District Court for the Western District of Pennsylvania

In Equity. No. 2295

Triplex Safety Glass Company of North America

v.

Duplate Corporation and Pittsburgh Plate Glass Company

Interlocutory Decree Upon Supplemental Bill and Answer—Filed December 5, 1931

And Now, to wit, December 5, 1931, this cause having come on to be heard upon the supplemental bill against the Pittsburgh Plate Glass Company and the answer of

Pittsburgh Plate Glass Company thereto, it is, by consent, Ordered, Adjudged and Decreed as follows:

1. That the said supplemental defendant, Pittsburgh Plate Glass Company, has jointly with the above-named defendant, Duplate Corporation, and by its own acts as well, infringed upon the Letters Patent of the United States here in suit, No. 1,182,739, as to claim 12 thereof, heretofore adjudged to be valid by this Court, and has violated the exclusive rights of the plaintiff thereunder.

2. That a writ of injunction, in accordance with the prayer of the said supplemental bill of complaint, be issued out of and under the seal of this Court perpetually enjoining and restraining the said defendant, Pittsburgh Plate Glass Company, and each of its respective officers, agents, [fol. 41] servants, attorneys and employees from further making, selling or using, or causing to be made, sold or used, or assisting others, and particularly said Duplate Corporation, in making, selling or using any strengthened glass involving the invention set forth in claim 12 of said Letters Patent of the United States No. 1,182,739, in violation of the exclusive rights of the plaintiff thereunder.

3. That the plaintiff recover from said supplemental defendant, Pittsburgh Plate Glass Company, the profits, gains and advantages which the said supplemental defendant has received or made or which have accrued to it from its said infringement of the said letters patent, together with the damages suffered by the said plaintiff from such infringement, and that with respect to any and all recoveries adjudged against the said Duplate Corporation by way of profits, damages, costs or otherwise, the said supplemental defendant Pittsburgh Plate Glass Company and the said Duplate Corporation shall be jointly and severally liable therefor.

4. That the Special Master heretofore appointed by this Court, G. Dixon Shrum, Esquire, of Pittsburgh, Pennsylvania, shall in the accounting proceedings now pending before him ascertain, take, state and report to this Court an account of the quantity of strengthened glass described and claimed in claim 12 of said Letters Patent of the United States No. 1,182,739, made, used or sold by the defendant, Pittsburgh Plate Glass Company, and also the gains, profits and advantages which the defendant, Pittsburgh Plate

Glass Company, has received or which have accrued to it from said infringement upon the exclusive rights of plaintiff under claim 12 of said letters patent, and also the damages which the plaintiff has suffered because of the said [fol. 42] supplemental defendant's infringement upon claim 12 of said Letters Patent of the United States No. 1,182,739.

5. That the plaintiff on such accounting shall have the right to cause the examination of the officers, servants, agents and employes of Pittsburgh Plate Glass Company and also to examine other witnesses and to cause the production and examination of the books, vouchers, records and documents of the defendant, Pittsburgh Plate Glass Company, and shall have the necessary process of the Court to compel such attendance and production of books, vouchers, records and documents of said defendant, Pittsburgh Plate Glass Company, before the Master at such times and places as the Master shall from time to time direct.

6. That the said supplemental defendant, Pittsburgh Plate Glass Company, shall pay the costs arising under said supplemental bill and answer and shall also be jointly and severally liable with said Duplate Corporation for the costs heretofore decreed against said Duplate Corporation.

F. P. Schoonmaker, United States District Judge.

The foregoing decree is consented to.

Marshall A. Christy, Solicitors for Defendant, Pittsburgh Plate Glass Company. Brown & Critchlow, Solicitors for Plaintiff, Triplex Safety Glass Company of North America.

[fol. 43] IN UNITED STATES DISTRICT COURT

[Title omitted]

RELEASE OF BOND—Filed December 16, 1931

In consideration of the assumption by Pittsburgh Plate Glass Company of all liability which may be adjudged against defendant, Duplate Corporation in this case, the plaintiff, Triplex Safety Glass Company of North America, hereby releases Maryland Casualty Company, surety, from all obligations assumed by it by the bond filed in this case

on December 10, 1929, and consents that an order may be entered cancelling the obligation of said surety.

December 15, 1931.

Marshall A. Christy, Solicitors for Defendant. William B. Greeley, Counsel for Plaintiff.

In United States District Court

Order Discharging Surety on Bond—Filed December 16, 1931

And Now, to wit, December 16, 1931, on reading the attached consent of the plaintiff to the release of Maryland Casualty Company, surety on the bond approved in this case on December 10, 1929, it is Ordered that the said surety, Maryland Casualty Company, be and hereby is released and discharged from all obligations under the said bond.

F. P. Schoonmaker, United States Judge.

[fol. 44] In United States District Court for the Western District of Pennsylvania

In Equity. No. 2295

Triplex Safety Glass Company of North America, Plaintiff,

v.

Duplate Corporation, Defendant

Accounting Proceeding Before the Master

Pittsburgh, Pa., July 28, 1930.

The parties met at the office of Brown & Critchlow, solicitors for plaintiff, at 1526 Farmers Bank Building, on the above date at 9 o'clock Eastern Standard Time, pursuant to notice.

Present: The Master, G. Dixon Shrum, Esq.; Jo. Baily Brown, Esq., for plaintiff; Marshall A. Christy, Esq., for defendant.

Mr. Brown presented to the Master a notice with service acknowledged thereon by solicitors for defendant of the motion for an order requiring defendant to file an account. Mr. Christy stated that he had no objection to the entry of the order, except that he wanted more time and asked that the return day be fixed as September 15th. This was accepted by the Master, and not objected to by solicitors for plaintiff, and thereupon the Master entered the following order:

[fol. 45] ORDER FOR DEFENDANT TO APPEAR AND FILE STATEMENT OF ACCOUNT, ETC.

To Duplate Corporation (formerly Pittsburgh Safety Glass Company) Defendant:

Pursuant to the interlocutory decree entered in the above case on December 9, 1929, you are hereby directed to appear before me at the office of Brown & Critchlow, 1526 Farmers Bank Building, on the Fifteenth day of September, 1930, at Nine O'clock in the morning, Eastern Standard Time, and then and there to bring in and file an account certified by the oath or oaths of such of your officers or agents as shall have the most certain and full knowledge of the matter, setting forth with regard to all strengthened glass embodying the invention described and claimed in Claim 12 of U. S. Patent No. 1,182,739, the following:

1. The total amount of such infringing glass manufactured, sold, or used by or for you down to the time of filing of said account; and

2. In debit and credit form all gains, profits, and advantages which you have derived, received or made by reason of the said manufacture, sale or use.

And it is further ordered that all books, papers, vouchers, and other documents relating to the matter at issue, and particularly those in which were entered any data concerning the cost of manufacture, extent of sale, or use of such glass need not be produced at the time and place herein specified, but shall be kept intact by you and remain in your possession subject to further order. Adjourned subject to call.

[fol. 46] Pittsburgh, Pa., September 22, 1930.

The parties met at the office of Brown & Critchlow, 1526 Farmers Bank Building, at nine o'clock Eastern Standard Time, pursuant to call of the Master.

Present: The Master, G. Dixon Shrum, Esq.; Jo. Baily Brown, Esq., for plaintiff; James C. Bradley, Esq., for defendant.

This meeting was held in place of the one previously ordered for September 15, by agreement of counsel and pursuant to informal direction of the Master.

Mr. Bradley produced a statement of account on behalf of the defendant as called for by the Master's order at the meeting of July 28, 1930, which was offered as defendant's statement of account and received and so marked by the Master.

A copy of this account was at the same time served on counsel for plaintiff.

Mr. Brown moved the Master for an adjournment to a later date, subject to call of the Master, so that plaintiff's accountants and attorneys may have an opportunity to examine this account to decide upon cross-examination or other steps that may be deemed advisable by them after they have had an opportunity to study it.

Mr. Bradley stated that he had no objection to such adjournment and the Master thereupon so ordered, stating that he would give the parties ample notice of the next meeting and of the witnesses and/or books, papers, etc., if any, to be produced at that time by the defendant for examination by the plaintiff.

Thereupon the meeting was adjourned.

[fol. 47] [Title omitted]

Pittsburgh, Pa., October 15, 1930.

The parties met at the office of Pittsburgh Plate Glass Company, 2200 Grant Building, at eleven o'clock Eastern Standard Time, pursuant to call of the Master.

Present: The Master, G. Dixon Shrum, Esq.; Ambrose L. O'Shea, Esq., for plaintiff; James C. Bradley, Esq., for defendant.

This meeting is held pursuant to agreement between counsel and with the consent of the Master.

STIPULATION AS TO CHECKING OF ACCOUNT, ETC.

It is stipulated that the plaintiff shall be given the opportunity of checking the account heretofore filed by the defendant against the books of the defendant corporation, and file in the case of a report of such check up, and for that purpose the firm of Lybrand, Ross Brothers & Montgomery, a firm of certified public accountants are appointed for general supervision of such check up.

It is further stipulated that the expense of this check up shall be borne in equal shares by the plaintiff and defendant, provided, that the defendant's share of this expense shall not exceed $1000. The firm of Lybrand, Ross Brothers & Montgomery shall give instructions to the [fol. 48] subordinates who shall be employed on the check up and who shall be furnished by the parties hereto as they may deem necessary for the proper checking up of the account. This stipulation, however, is entered into without prejudice to the rights of either party hereto to further examination of the books if they so see fit.

It is further understood that the parties hereto reserve all rights to objections as to the materiality, competency or relevancy of the report to be filed as a result of this check up.

Thereupon the meeting was adjourned subject to the call of the Master for further hearings.

Pittsburgh, Pa., April 17, 1931.

The parties met at 1518 Farmers Bank Building, Pittsburgh, Pennsylvania, at ten o'clock Eastern Standard Time, pursuant to the following notice:

"NOTICE OF ACCOUNTING PROCEEDINGS BEFORE G. DIXON SHRUM, SPECIAL MASTER

Pittsburgh, Pa., April 13, 1931.

To Marshall A. Christy, Esq., Solicitor for Defendant. Jo. Baily Brown, Esq., Solicitor for Plaintiff. William F. Marsh, Resident Partner Lybrand, Ross Bros. & Montgomery Auditors and Accountants.

GENTLEMEN:

Please take notice that at my office, 1508 Law & Finance Building, Pittsburgh, Pennsylvania, a meeting of Counsel [fol. 49] is called for 10:00 A. M., Friday, April 17th, 1931 in the above entitled case, at which time the plaintiff will be called upon for its report of the check-up of the account heretofore filed by the Defendant against the books of the Defendant Corporation, under the general supervision of Lybrand, Ross Bros. & Montgomery, Certified Public Accountants, pursuant to stipulation of Counsel October 15, 1930.

Yours very truly, G. Dixon Shrum, Special Master."

Present: G. Dixon Shrum, Esq., Special Master; Jo. Baily Brown, Esq., for the plaintiff; Marshall A. Christy, Esq., for the defendant; William F. Marsh, Resident Partner, Lybrand, Ross Bros. & Montgomery, Auditors and Accountants.

This meeting was held at the office of Brown & Critchlow, 1518 Farmers Bank Building, instead of at the office of the Special Master, pursuant to agreement of the parties.

The Master stated that he called upon Mr. Marsh, resident partner of Lybrand, Ross Bros. & Montgomery, for the report of the check-up which was being made under the supervision of that firm, and that Mr. Marsh reported that on April 1, 1931, he had sent to Mr. O'Shea, counsel for the Triplex Company, two copies of said report, which was very voluminous.

By Mr. Brown: I understand that the purpose of this hearing is to expedite the proceeding and to find out when a further hearing can be held. I am instructed by Mr. [fol. 50] O'Shea to state to the Master and counsel for

defendant that he has been continuously engaged on the report since its receipt from the accountants; that he regards this report as a part of his proofs in the case; that therefore he feels that he must carefully study it before offering it in evidence; that he is anxious to proceed with the case as soon as possible; and that as now advised he thinks that he will be ready to commence taking testimony and to put in his entire case—subject to availability of witnesses—by a date commencing May 11th.

(By agreement of the parties the meeting was adjourned until Monday, May 11, at the office of Brown & Critchlow, 1518 Farmers Bank Building, Pittsburgh, Pa.)

[Title omitted]

Accounting Proceedings Before G. Dixon Shrum, Special Master

The parties met at the office of Brown & Chitchlow, Farmers Bank Building, Pittsburgh, Pennsylvania, at nine o'clock, Eastern Standard Time, Monday, May 11, 1931, pursuant to call of the Master.

Present: For Plaintiff: Ambrose L. O'Shea, Esq. For Defendant: Marshall A. Christy, Esq.

[fol. 51] Mr. O'Shea: I would like to make a part of the record my objections to the defendant's account.

"Objections to Defendant's Account as Filed With the Master

"First. Plaintiff objects to the account as filed for the reason that it is not in proper form.

"Second. Plaintiff objects to the defendant's account as filed in that it does not set forth the individual sales made by the defendant to its respective customers.

"Third. Plaintiff objects to the account as filed, in that it offsets the losses derived from loss-incurring sales against the profits derived by the defendant from profit-incurring sales.

"Fourth. Plaintiff objects to the account as filed, in that it charges against the amounts received from sales the cost of manufacturing large quantities of its product which was not sold.

"Fifth. Plaintiff objects to the account as filed, in that it includes as an item of cost an amount representing the material, labor and overhead incurred by the defendant in the manufacture of goods which were returned by the customers and offsets the loss incurred thereby against the profit-bearing sales.

"Sixth. Plaintiff objects to the account as filed, in that for the year 1928 the defendant credits itself as an item of cost with 3,722,601 square feet of glass at a total purchase price of $1,514,254.74, and also credits itself as an item of cost with 2,758,302 square feet of pyralin at a total purchase price of $445,333.80, whereas it charges itself with the sale of only 1,924,896 square feet of glass and 962,448 [fol. 52] square feet of pyralin at a total selling price of $1,871,826.25, leaving a balance of 1,797,705 square feet of glass and 1,795,854 square feet of pyralin unaccounted for.

"Seventh. Plaintiff objects to the account as filed, in that for the year 1929 defendant credits itself as an item of cost with 5,287,322 square feet of glass at a total purchase price of $2,159,062.17, and also credits itself as an item of cost with 3,198,639 square feet of pyralin at a total purchase price of $706,855.53, whereas it charges itself with the sale of only 4,038,720 square feet of glass and 2,019,360 square feet of pyralin at a total selling price of $3,784,129.61, leaving a balance of 1,248,602 square feet of glass and 1,179,279 square feet of pyralin unaccounted for.

"Eighth. Plaintiff objects to the account as filed, in that for the six months of the year 1930 included in the accounting period, defendant credits itself as an item of cost with 1,620,151 square feet of glass at a total purchase price of $512,776.80, and also credits itself as an item of cost with 954,474 square feet of pyralin, at a total purchase price of $182,144.51, whereas it charges itself with the sale of only 1,335,072 square feet of glass and 667,536 square feet of pyralin, at a total selling price of $1,073,295.76, leaving a balance of 285,079 square feet of glass and 286,938 square feet of pyralin unaccounted for.

"Ninth. Plaintiff objects to the account as filed, in that for the years of the accounting period defendant credits itself as an item of cost with large sums for labor, which said sums were expended by the defendant in the manufacture of a large amount of laminated glass that is unaccounted for in the defendant's sales.

[fol. 53] "Tenth. Plaintiff objects to the inclusion in the cost items for the year 1928 of interest on investment in the amount of $60,000, being interest at the rate of six per cent per annum on $1,000,000, for the reason that the books of the defendant company indicate that the defendant's investment did not reach $1,000,000 until in or about the month of October, 1928, and that in the months prior thereto in the year 1928, the investment ranged from $50,000 to $700,000.

"Eleventh. Plaintiff objects to the account as filed, and particularly with respect to the inclusion therein as an item of current expense of all credits representing 'Expenses for Experimentation,' for the reason that all such experimental expenses are properly capital expense, particularly so in this case in that such experimental expenses were carried on for the purpose of developing inventions and resulted in the development of inventions and the filing of applications therefor, all of which is a capital investment.

"Twelfth. Plaintiff objects to the account as filed, and particularly with respect to the inclusion therein as an item of current expense of all credits representing and entitled 'Miscellaneous Patent Expenses,' for the reasons given in objection 'Eleventh.'

"Thirteenth. Plaintiff objects to the account as filed, and particularly with respect to the inclusion therein as an item of current expense of all credits representing and entitled 'Commissions paid to Pittsburgh Plate Glass Company,' for the reason that it does not appear on the face of the account what, if any, arrangement, contract or agreement existed between the defendant and the Pittsburgh Plate Glass Company.

[fol. 54] "Fourteenth. Plaintiff objects to the account as filed, and particularly with respect to the inclusion therein as an item of current expense of all credits representing

'Payments to the Mellon Institute Fellowship,' for the reason that it appears on the face of the account that the amounts paid to Mellon Institute Fellowship represent gifts.

"Fifteenth. Plaintiff objects to the account as filed, and particularly with respect to the inclusion therein as an item of current expense of all cerdits representing 'Expenses of Triplex Patent case,' for the reason that such expense is not a proper item of expense in a patent accounting.

"Sixteenth. Plaintiff objects to the account as filed, and particularly with respect to the inclusion therein as an item of current expense of all credits representing 'Extraordinary Expenses,' for the reason that the items of expense entitled 'Extraordinary Expenses' represent the cost of moving the defendant's plant, which is in the nature of a capital expense.

"Seventeenth. Plaintiff reserves the right to file such further objections from time to time during the hearing as it may be advised are necessary or proper in view of the testimony that may be adduced at such hearings.

Respectfully submitted, Ambrose L. O'Shea, Counsel for Plaintiff."

[fol. 55] C. L. McHenry, a witness produced on behalf of the plaintiff, having been duly sworn, testified as follows:

Direct examination.

By Mr. O'Shea:

Q. Mr. McHenry, you are the person who swore to defendant's statement of account before the Master?

A. I am.

Q. Are you an officer of the defendant, Duplate Corporation?

A. I am not.

Q. Will you please state just what your connection with the defendant, Duplate Corporation, is?

A. As auditor.

Q. Auditor of Duplate Corporation?

A. Well, no; that is not exactly right. I am auditor for the Pittsburgh Plate Glass Company, which carries my duties to the Duplate.

Q. Just what is the connection between the Pittsburgh Plate Glass Company and the Duplate Corporation?

A. Their stock holdings.

Q. Pittsburgh Plate Glass Company is a stockholder of the Duplate Corporation?

A. Duplate Corporation; yes, sir.

Q. Does it have any other stockholder besides the Pittsburgh Plate Glass Company?

A. Du Pont Company, 50 per cent.; that is all.

Q. Any other besides the du Pont Company and the Pittsburgh Plate Glass Company?

A. No, sir.

Q. What were the respective stockholdings of those two corporations?

A. Fifty per cent. each.

Q. So that as the auditor of the Pittsburgh Plate Glass Company, you prepared the defendant's statement of ac- [fol. 56] count when it was called for under the Master's order of the Duplate Corporation?

A. Yes, sir.

Q. I take it, therefore, that you are thoroughly familiar with the books of the Duplate Corporation?

A. Yes.

Q. And had that familiarity before the filing of this account?

A. Yes, sir.

Q. When was the Duplate Corporation organized?

A. In the last—I think it was December, about the 28th, of 1927. It was just a few days before the beginning of 1928.

Q. Did any corporation or individuals doing business under the name of Duplate Corporation, or any other name that you were connected with, either directly or indirectly, carry on any business in manufacturing or selling laminated glass, prior to January 1, 1928?

A. No one that I was connected with.

Q. Did the Pittsburgh Plate Glass Company make or sell laminated glass prior to January 1, 1928?

A. No, sir.

Q. Now, in the early part of 1928, after the incorporation of the defendant company, did the defendant company have a uniform price which it charged to all customers?

A. For the sale of Duplate——

Q. For the sale of laminated glass.

A. The price was not uniform; it varied considerably.

Q. And what were those variations dependent upon?

A. On the quality of the product and the amount of edge work.

Q. Anything else?

A. That is all I can think of now.

[fol. 57] Q. What were the differentiations in quality?

A. As to the quality of glass and pyralin which it was necessary to use in order to produce the product that the customer required.

Q. Now, referring to the quality of the glass, how many different qualities did the Duplate Corporation have in the early part of 1928?

A. I believe they had some silvering quality, glazing quality, window glass, and heavy polished plate.

Q. Is there a distinction between glazing quality and window glass, in the glass trade?

A. Oh, yes. It is made under a different process. Glazing quality of plate glass—when I speak of glazing quality, that is plate glass.

Q. Window glass is commonly known in the trade as sheet glass, is it not?

A. It is known under that name.

Q. And the other qualities are known as plate glass?

A. Yes, plate glass.

Q. And how many different qualities were there under the plate glass heading?

A. Two—silvering and glazing. I would also say that the difference of the bracket of the glass that was used would affect the cost.

Q. What do you mean by "bracket"?

A. Difference in the size of the glass.

Q. Is that true both of plate glass and sheet glass?

A. It is.

Q. Now, you spoke also as to difference as to edge work. That really applies to both plate and sheet?

A. Yes.

Q. And is really an additional operation on the glass?

A. It is the finishing of the edges, making it fit for use.

[fol. 58] Q. Of course, some glass was sold without the edge work?

A. It was.

Q. And still it was fit for use?

A. Well, it had to be cut and edged before it could be used.

Q. Well, just what does edging mean, in the trade?

A. It is putting on either a rough or smooth or finished edge on the piece that is to be used.

Q. You mean on the laminated piece?

A. Yes; laminated or unlaminated.

Q. Well, of course, we are directing our attention in this examination to laminated.

A. That applies to laminated.

Q. So in the future when we are talking of glass in this examination, let us take it for granted that we are discussing laminated glass, unless the question asks for some information with respect to glass generally or specifically.

A. Yes, sir.

Q. Is it not possible to use glass without having this edge work on it?

A. It is, and it is used in the rear lights of automobiles.

Q. As a general custom, is it not true that the Duplate Corporation sold its glass at a particular price, and then an additional price for the edge work that was put on the laminated glass?

A. On one order that happened, with the Fisher Body Company.

Q. Is that the only order?

A. That is the only large order. There may have been small orders that were filled, so much per foot for the glass, and so much per inch or foot for the edge work. The majority of sales are made so much per plate or per foot.

Q. Without any additional charge for——

[fol. 59] A. That price includes the edge work cost.

Q. That price included the edge work cost, except in the case of the Fisher Body?

A. The Fisher Body was the large order that was handled the other way.

Q. Did your differentiation in prices between different customers have any relation to the cost of transportation of the glass?

A. I could not answer that.

Q. You mean by that that you don't know?

A. I don't know. That would be the sales department's operations.

Q. And who in the sales department?

A. Mr. Judson.

Q. May I take it for granted that with respect to all matters relating to sales, that the man who would have the information on that point would be Mr. Judson?

A. Yes, sir.

Q. Is Mr. Judson an officer of the Duplate Corporation?

A. No, sir.

Q. Is he an employee of the Duplate Corporation?

A. No. He is Pittsburgh Plate Glass Company entirely.

Q. Is he an officer of the Pittsburgh Plate Glass Company?

A. No, not to my knowledge.

Q. He is an employe of the Pittsburgh Plate Glass Company?

A. Yes, sir; sales manager.

Q. And what is his title in the Pittsburgh Plate Glass Company?

A. Sales manager.

Q. From whom did Duplate purchase its glass?

A. Pittsburgh Plate Glass Company, practically—that is, all the plate glass. It may have purchased window glass [fol. 60] outside the Pittsburgh Plate Glass Company.

Q. But its main purchases of glass were from the Pittsburgh Plate Glass Company?

A. Yes, sir.

Q. And do you know whether the Duplate Corporation received any preferential price over the market for the glass which it purchased from the Pittsburgh Plate Glass Company?

A. I understand it purchased it at the market price, less 10 per cent.; that is, the price to other customers. Ten per cent. lower than outside trade would be the proper way to put that. There may be a standard list with the standard 10 per cent. on it; the Duplate Corporation would get another 10 per cent. below the other customers.

Q. So that customers other than Duplate Corporation were considered as outside customers?

A. Yes, sir.

Q. And Duplate Corporation was considered as having some relation to the Pittsburgh Plate Glass Company?

A. Well, they received the benefit of that lower purchase price.

Q. But you considered the others as being outside customers?

A. Yes, sir.

Q. Who were the officers of Duplate Corporation in or about January, 1928?

A. Mr. H. S. Wherrett—I am not familiar enough with that to give you the title or just who are all the officers. Mr. Wherrett, as I recall it, was president; Mr. Davis, Mr. Doyle was treasurer, and Mr. Pitcairn assistant treasurer.

Q. But before that, the defendant in this case was originally incorporated under the name of Pittsburgh Safety Glass Company, was it not?

[fol. 61] A. Yes, sir, it was.

Q. And some time later changed its name to Duplate Corporation?

A. Yes, sir.

Q. Do you know just when that change took place?

A. About the spring of 1929.

Q. Now, as I understand you, you stated that Mr. H. S. Wherrett was an officer of the Duplate Corporation in or about the early part of 1928?

A. He was the president of the Pittsburgh Safety Glass Company, and I also understand president of the Duplate Corporation.

Q. You think he was also president of the Duplate Corporation?

A. Yes.

Q. Do you know a man named F. D. Davis, Jr.?

A. No, sir.

Q. You don't know whether he was chairman of the Board of the Pittsburgh Safety Glass Company?

A. I do not.

Q. Do you know a man named R. L. Clause?

A. Yes, sir.

Q. Was he an officer of the Pittsburgh Safety Glass Company in the early part of 1928?

A. He is now, and he probably was then, but as to his title—I don't know.

Q. Is it possible for you to find out that fact from your records?

A. Yes, sir.

Q. Will you do so and let us know?

A. Yes, sir.

Q. Whether he was an officer of the Pittsburgh Safety Glass Company at that time, and if so, what officer?

A. Yes, sir.

Q. But you do know that he was at that time vice-president of the Pittsburgh Plate Glass Company?

[fol. 62] A. Yes, sir.

Q. Do you know a man named H. B. Higgins?

A. Yes, sir.

Q. Was he an officer of Pittsburgh Safety Glass Company, in or about the early part of 1928?

A. I don't know.

Q. Will you endeavor to ascertain that fact for us?

A. I will.

Q. And do you know whether or not Mr. H. B. Higgins was an officer of the Pittsburgh Plate Glass Company at or about that time?

A. He was vice-president.

Q. Of Pittsburgh Plate Glass Company?

A. Yes.

Q. Do you know a man by the name of R. W. Reisinger?

A. I do not.

Q. There was no man by that name an officer or director of the Pittsburgh Plate Glass Company at that time?

A. No, sir.

Q. Do you know who the directors were of the Pittsburgh Safety Glass Company, in or about the early part of 1928?

A. I do not.

Q. Will you endeavor to ascertain that fact also?

A. I will.

Q. Do you know a man named Clarence M. Brown?

A. I do.

Q. Is he alive?

A. Yes.

Q. Was Clarence M. Brown an officer or director of the Pittsburgh Safety Glass Company in the early part of 1928?

A. I don't know.

Q. Was he connected as an officer or director of the Pittsburgh Plate Glass Company at that time?

[fol. 63] A. He was vice-president.

Q. Do you know a man named C. K. Davis?

A. I do not.

Q. Do you know a man named D. W. Doyle?

A. Yes, sir.

Q. Was he an officer or director of the Pittsburgh Safety Glass Company, in the early part of 1928?

A. He was not.

Q. Is he an officer or director now?

A. No. He is in Italy at the present time. He was treasurer, I believe, in the years 1929 and 1930, or maybe just in 1930.

Q. That is, treasurer of Pittsburgh Safety Glass Company?

A. Yes.

Q. In either both or one of the years 1929 or 1930?

A. Yes. Mr. McBride was treasurer in the year 1928.

Q. Was Mr. McBride an officer of the Pittsburgh Plate Glass Company?

A. No, sir.

Q. Or an employee of the Pittsburgh Plate Glass Company?

A. No.

Q. When you obtain the information, Mr. McHenry, with respect to who were the officers and directors of Pittsburgh Safety Glass Company, and particularly those whose names you have jotted down, will you also ascertain whether they continue up to the present time, and if not, let us have such changes as were made up to the end of the accounting period?

A. Yes, sir.

Q. Now, it is a fact, is it not, that in or about 1931, the Pittsburgh Plate Glass Company purchased all of the interest of du Pont Company?

Mr. Christy: Object to the question as immaterial, in that it relates to a time subsequent to the termination of the [fol. 64] accounting period in this case.

Mr. O'Shea: Mr. Master, I think it is material, for the reason this case is still progressing, and it is of vital importance to determine just what the present status of this Duplate Corporation is. I think it is going to be very

material for us before the end of this accounting, and, as a mat-er of fact, I think it is more or less a matter of public record now.

The Master: Objection overruled.

A. Pittsburgh Plate Glass Company purchased all the interest, but I am not sure as to the date.

Q. Well, in any event, at the present time the Pittsburgh Plate Glass Company is the sole stockholder of Duplate Corporation?

A. Yes, sir.

Q. Now, Mr. McHenry, in the early part of 1928, where was the corporation, then known as Pittsburgh Safety Glass Company, located?

A. At the upper end of Works No. 1, on the property of the Pittsburgh Plate Glass Company, and in their building.

Q. You mean by "Works No. 1" a plant or works of the Pittsburgh Plate Glass Company?

A. It is the Creighton factory.

Q. And at that period then, the factory of the Pittsburgh Safety Glass Company occupied the same premises as Pittsburgh Plate Glass Company?

A. Yes, sir.

Q. And was operating in a plant of the Pittsburgh Plate Glass Company?

A. Yes, operating in one of our buildings.

Q. And "our buildings" means Pittsburgh Plate Glass Company?

A. Pittsburgh Plate Glass Company, yes.

[fol. 65] Q. And how long did it continue operating in that building?

A. Until about February, 1929.

Q. Did it move at that time?

A. It moved to its own building.

Q. And where was that building located?

A. It stayed on Pittsburgh Plate Glass Company's property.

Q. At Creighton also?

A. At Creighton.

Q. In 1928, when the Pittsburgh Safety Glass Company was occupying and operating in one of the plants of the Pittsburgh Plate Glass Company, did it pay rent?

A. It did not, for the factory building it was operating in.

Q. Has either the Pittsburgh Safety Glass Company or its successor in name, Duplate Corporation, paid rent to Pittsburgh Plate Glass Company for any of the buildings it occupied?

A. It has paid rent, I believe, in the year 1929, for storage space that they took or used in the Creighton factory.

Q. That is the only rent it ever——

A. And they paid rent for an office building.

Q. And office building?

A. An office building.

Q. Did it have an office building at Creighton?

A. When it was operating at the first plant, they rented an office building of the Pittsburgh Plate Glass Company. It was a very small building—office space.

Q. At Creighton?

A. Yes.

Q. When it built its factory in or about the early part of 1929, did it own the ground on which it built the factory?

[fol. 66] A. It did not.

Q. Who was the owner of that land?

A. Pittsburgh Plate Glass Company.

Q. Going back again to the early part of 1928, and through that year, where were the general books of account of the defendant, then known as Pittsburgh Safety Glass Company, kept?

A. In the general office of the Pittsburgh Plate Glass Company.

Q. And where is that located?

A. In the Grant Building, Pittsburgh.

Q. And are we to understand from that that the corporation then known as Pittsburgh Safety Glass Company maintained its general offices in the space occupied by Pittsburgh Plate Glass Company?

A. There was only one office occupied by the Duplate or Safety Glass employees, which was Mr. Penning's, the manager of the plant.

Q. One office in the offices of Pittsburgh Plate Glass Company?

A. Yes.

Q. In the Grant Building, in Pittsburgh?

A. Yes. In 1928, we were in the Frick Building.

Q. When you say "we", you mean the Pittsburgh Plate Glass Company?

A. Yes.

Q. Did Pittsburgh Safety Glass Company pay rent to the Pittsburgh Plate Glass Company for that one office of Pittsburgh Plate Glass Company?

A. It did, after we moved to the Grant Building, where they occupied a separate room.

Q. When did you move to the Grant Building, approximately?

A. March, 1929.

Q. So that all during the year 1928, the Pittsburgh Safety Glass Company paid no rent to Pittsburgh Plate Glass Company for the office which it occupied in the offices of [fol. 67] Pittsburgh Plate Glass Company?

A. Not to my knowledge.

Q. How many employees were in the room occupied by the Pittsburgh Safety Glass Company?

A. In 1928?

Q. In 1928.

A. Three employees in the board room.

Q. Well, the board room is the room where?

A. Where Mr. Penning had his desk.

Q. Which the Pittsburgh Safety Glass Company occupied as its accounting department, shall we say?

A. No; Mr. Penning was the manager.

Q. Manager of what?

A. Safety Glass.

Q. Mr. Penning was manager of the Safety Glass Company and was an employee of the Pittsburgh Safety Glass Company?

A. Yes.

Q. And received his salary from the Pittsburgh Safety Glass Company?

A. Yes.

Q. Had he any connection at all with the Pittsburgh Plate Glass Company?

A. Not at all.

Q. The other three accountants or bookkeepers, were they all employees of the Pittsburgh Safety Glass Company?

A. Of the Pittsburgh Plate Glass Company.

Q. They were employees of the Pittsburgh Plate Glass Company?

A. Yes.

Q. They received their salaries from the Pittsburgh Plate Glass Company?

A. Yes, sir.

Q. Throughout this year 1928?

A. Yes, sir.

[fol. 68] Q. Did you do any work on the books of the Pittsburgh Safety Glass Company during the year 1928?

A. I did.

Q. What was the character of the work which you did?

A. Instructions to the factory accountant.

Q. And where was the factory accountant located?

A. At Creighton.

Q. Did you receive any part of your salary from the Pittsburgh Safety Glass Company?

A. No, sir.

Q. For the work which you did for it?

A. Not in 1928.

Q. Did you audit the books of the Pittsburgh Safety Glass Company for the year 1928?

A. Yes, sir.

Q. You did that as an employee of Pittsburgh Plate Glass Company?

A. Yes, sir.

Q. Where were the records of factory accounts kept in the year 1928?

A. At the factory.

Q. By an employee of the Pittsburgh Safety Glass Company?

A. Yes, sir.

Q. Who determined the policy and amount of depreciation and obsolescence in the year 1928?

A. Mr. Penning and Mr. Spahr, in conference with the directors.

Q. Who is Mr. Spahr?

A. Assistant comptroller.

Q. Assistant comptroller of what?

A. Pittsburgh Plate Glass Company.

Q. Those two were in conference with the directors of which company?

A. Of the Pittsburgh Plate Glass Company, and they may have consulted the directors of the Pittsburgh Safety [fol. 69] Glass Company from Arlington—Mr. Davis.

Q. Where is Arlington?

A. Arlington, New Jersey.

Q. You made none of the entries in the general books of account of the Pittsburgh Safety Glass Company or the Duplate?

A. No, sir.

Q. You simply audited such entries as were found there?

A. Yes, sir.

Q. Do you recall an account on the general ledger of Pittsburgh Safety Glass Company, and carried through into the books of the corporation of the changed name, "Duplate Corporation," entitled "E. A. Pitcairn, Treasurer's Account"?

A. That account should be there, although he is assistant treasurer, not treasurer.

Q. That account should be where?

A. In the Duplate's books.

Q. The general ledger of the Pittsburgh Safety and Duplate books?

A. Yes, sir.

Q. You say E. A. Pitcairn is assistant treasurer?

A. Yes.

Q. Of what?

A. The Duplate Corporation.

Q. And was assistant treasurer of Pittsburgh Safety Glass Company?

A. Yes.

Q. Did E. A. Pitcairn have any connection with the Pittsburgh Plate Glass Company?

A. He was treasurer.

Q. He was treasurer of Pittsburgh Plate Glass Company also?

A. Yes.

[fol. 70] Q. And assistant treasurer of Pittsburgh Safety Glass Company and Duplate Corporation?

A. Yes, sir.

Q. Who was the treasurer of Pittsburgh Safety Glass Company?

A. Mr. McBride.

Q. In 1928?

A. Yes.

Q. Did he remain treasurer up until June, 1930, do you know?

A. No; Mr. Doyle took his place. I don't recall the date.

Q. Did Mr. McBride have anything to do with the Pittsburgh Plate Glass Company?

A. No, sir.

Q. He was solely an officer and employee, I assume also, of the Pittsburgh Safety Glass Company?

A. Yes; a du Pont employee.

Q. He was a du Pont man?

A. Yes.

Q. Did he receive any compensation for his services, as treasurer?

A. Not to my knowledge.

Q. Did Mr. Doyle receive any compensation for his services as treasurer?

A. Not to my knowledge.

Q. Did Mr. E. A. Pitcairn receive any compensation for his services as assistant treasurer of Pittsburgh Safety Glass Company and Duplate Corporation?

A. No, sir.

Q. I understood you to say, Mr. McHenry, that Pittsburgh Safety Glass Company had no sales manager?

A. Their sales were handled by—sold to the Pittsburgh Plate Glass Company. The product was sold to the Pittsburgh Plate Glass Company.

[fol. 71] Q. You mean by that, don't you, that the Pittsburgh Plate Glass Company sold all the product of Pittsburg Safety Glass Company to the consumers, like automobile manufacturers, automobile body builders, jobbers——

A. Who sold it, did you say?

Q. Pittsburgh Plate Glass Company.

A. Pittsburgh Plate Glass Company did.

Q. What was the system used by the Pittsburgh Safety Glass Company, and later the Duplate Corporation, in making purchases of raw material and supplies?

A. They were requisitioned by the plant manager and purchased through the Pittsburgh office—the Pittsburgh Plate Glass Company.

Q. Am I correct in stating, then, that the system followed somewhat as follows: that the plant manager made a requisition for his supplies of raw material to the Pittsburgh Plate Glass Company, and that thereafter the Pittsburgh Plate Glass Company placed the orders with the suppliers of raw material?

A. Yes, sir.

Q. That is true of what is ordinarily referred to both as raw material and supplies?

A. Yes, sir.

Q. It is true, is it not, that all glass, excepting odd instances, was purchased from Pittsburgh Plate Glass Company?

A. It is.

Q. And that all pyralin, except possibly in odd instances, also was purchased from du Pont Viscoloid Company?

A. It is.

Q. Now, what was the system or plan of selling the product of the Pittsburgh Safety Glass Company, afterwards known as Duplate Corporation?

[fol. 72] A. An invoice was rendered by the Safety Glass Company and Duplate Corporation to the Pittsburgh Plate Glass Company.

Q. Can we start back from the consumer and trace it back to Pittsburgh Safety?

A. The Pittsburgh Plate Glass Company's sales department would secure an order, say, from Fisher Body Company; that order would be placed with the Duplate Corporation, to manufacture certain size and glass to pattern.

Q. Was there some document transmitted from Pittsburgh Plate to Pittsburgh Safety?

A. Yes, there would be a copy of the order made up.

Q. That is to say, a copy from the ultimate consumer, as Fisher Body Company, would be made up by Pittsburgh Plate Glass Company and turned over to Pittsburgh Safety Glass Company or Duplate?

A. Yes; to make up certain glass according to the pattern that the order called for. Then when the glass is shipped an invoice is made out by the Safety Glass Company or the Duplate Corporation against the Fisher Body Company, and if the sales price is $1.75, they mark it on the invoice "$1.75," and from that bill from the Duplate Corporation, an invoice is made out by the Pittsburgh Plate Glass Company to the Fisher Body Company, at $1.75, as specified on the original order. The Pittsburgh Plate Glass Company pays Duplate Corporation $1.75, less their commission, say of 3 per cent.

Q. I didn't quite understand, Mr. McHenry. I understood you to say that Pittsburgh Safety, afterwards Duplate invoiced directly to the consumer, as Fisher Body Company?

A. They specify on that bill whether it is for Fisher Body Company.

[fol. 73] Q. Is this what you mean: Pittsburgh Safety, or Duplate, would make up an invoice, on which would be stated that the glass included in that invoice was for Fisher Body, or Smith, or Jones?

A. Yes.

Q. But that that invoice would not go to Fisher Body, Smith, or Jones?

A. No, it does not.

Q. Where would that invoice go?

A. That comes to the Pittsburgh office.

Q. You mean by Pittsburgh office——

A. The Pittsburgh Plate Glass Company's office. It is our understanding that we make all the sales. That saves us work in making a regular bill from the Duplate Corporation to Pittsburgh Plate Glass Company, and then from the Pittsburgh Plate Glass Company to the consumer. We use this original bill that comes from the Duplate factory, to tell us that this shipment goes to Fisher Body. That serves as our original invoice, which is kept in our files in the Pittsburgh Plate Glass Company.

Q. This invoice from Pittsburgh Safety Glass Company, or Duplate Corporation, is that the invoice that is usually known in your organization as the "pink slip"?

A. Yes, it is.

Q. Well, was not the sole purpose of that pink slip which you have referred to in your testimony as an invoice from Duplate or Safety Glass to the Pittsburgh Plate Glass Company, to acquaint Pittsburgh Plate Glass Company with the fact only that certain shipments had been made to certain customers, and that with that information, to wit, that shipment had been made, to acquaint the Pittsburgh Plate Glass Company further with the fact that it was time then to bill the customer, such as Fisher Body, Smith or Jones?

[fol. 74] A. No, that would put it on a basis of a shipping record. It is really the original invoice that is retained in our office as such.

Q. Invoice from whom to whom?

A. From the Duplate Corporation to Pittsburgh Plate Glass Company. Also, it serves from Pittsburgh Plate Glass Company to the consumer.

Q. Was a copy of that, what I refer to as the pink slip, and which you have referred to as the Duplate invoice to Pittsburgh Plate, retained by Safety Glass, or later Duplate Corporation?

A. They have a copy of each one.

Q. They kept a copy of each one?

A. Yes.

Q. At the end of each month, did not Pittsburgh Plate Glass Company use the pink slips for the purpose of making up a summary of the shipments made during that month?

A. We did.

Q. And what was the purpose of that summary?

A. To get our cost, what we were to pay Duplate for the goods we purchased from them.

Q. To get your cost?

A. Yes.

Q. You mean by that to determine simply how much you owed Duplate since your cost was merely what Duplate or Safety Glass charged Pittsburgh Plate?

A. Plus 3 per cent.

Q. The purpose of the summary from the pink slips was to enable you to determine only how much commission you were entitled to during that month, for the goods shipped in that month by Duplate or Safety Glass?

A. Yes. We used it for that purpose.

Q. And was there any other purpose in that summarization of the pink slips?

[fol. 75] A. Well, it would give us the total sales of Duplate for that month and the commission earned.

Q. Well, wouldn't it have been possible for you to have summarized your own orders received from the customers, to obtain the same information?

A. No; because we might not have posted to that order the amount of goods shipped during that month from the Pittsburgh office.

Q. So that the main purpose of the pink slip, then, was to inform you of the amount of goods shipped during that month by Duplate?

A. Well, it served as our original invoice.

Q. It is true it served as your original invoice, but it also served, didn't it, to acquaint you with the fact that so much

footage had been shipped to various customers during the month by Safety Glass Company or Duplate?

A. Yes.

Q. Are these pink slips available under one binder?

A. A certain portion would be. A portion of a month or maybe two months in one volume.

Q. Are they in binders scattered through other sales of Pittsburgh Plate?

A. No; kept separate.

Q. All kept separate.

A. Yes.

Q. Now, it is a fact, is it not, Mr. McHenry, that in some instances, at least, it was the policy of the Pittsburgh Plate Glass Company to grant a rebate to some of its customers. I use the word "rebate," because that is the only way I know how to specify it. What I mean by it is that the invoice to the customer would specify a particular rate per foot and that subsequently Pittsburgh Plate Glass Company would forego some percentage or some amount of that invoiced price?

[fol. 76] A. Yes, sir; that is true.

Q. And that that policy was acquiesced in by the Pittsburgh Safety Glass Company and Duplate Corporation, to the extent that these rebates or allowances were charged back against Pittsburgh Safety Glass Company, or Duplate Corporation?

A. Yes, sir.

Q. How was the amount of those rebates or allowances determined upon, and by whom?

A. Well, we would have a contract, say with Fisher Body, for glass, at $2.00 a foot.

Q. When you say "we," you mean Pittsburgh Plate Glass Company?

A. Yes, Pittsburgh Plate; and they would have some bodies built by Fleetwood, for, say, Cadillac cars. We would bill Fleetwood at $2.50 a foot, so that they would not know what Fisher Body was paying us for the glass. Later on, we would rebate fifty cents a foot to the Fisher Body Company, because Fleetwood—we charged that back to them at $2.50, and we would have to abide by our contract that we would furnish their glass for $2.00 a foot—the glass that was used in their cars.

Q. Now, the determination of whether that rebate should be fifty cents or ten cents rested solely in Pittsburgh Plate Glass Company?

A. It rested solely on the original contract with the purchaser.

Q. Which was made between Pittsburgh Plate Glass Company and the customer?

A. Yes, the consumer.

Q. And who, in Pittsburgh Plate Glass Company, determined what rebate would be given?

A. Mr. Judson.

Q. And yet when you came to pay the Safety Glass Company or Duplate for the goods shipped for any particular month, you deducted from your payment to Duplate the [fol. 77] amount of these rebates or allowances? Is that the fact?

A. We deducted from them the amount after taking off what commission we made on that shipment.

Q. I mean, laying aside the question of commissions due Pittsburgh Plate, it is a fact that you charged back, or deducted from the invoice price which appeared on the pink slip from Pittsburgh Safety to Pittsburgh Plate, any rebates that had been allowed by Mr. Judson?

A. Yes, sir.

Q. Were there no instances where such rebates were allowed on orders that came directly from the user of the glass?

A. Not to my knowledge. That is for a price adjustment.

Q. Do you distinguish between what you now refer to as a price adjustment and what you have previously referred to as a rebate?

A. Well, this that we mentioned here is a rebate or price adjustment.

Q. Yes; but my question was whether there were no instances where such rebate or price adjustment was allowed to the user directly, even on purchases that were made direct?

A. Not to my knowledge.

Q. Is it a fact that shipments made by Pittsburgh Safety Glass, later Duplate Corporation, were boxed—that is, the glass was boxed—did the invoices or pink slips charge Pittsburgh Plate with that boxing cost?

A. Yes. There were some sales where boxing was charged to the customer, and it was not credited to the Duplate Corporation.

Q. Was that an oversight or the policy?

A. That was the intention at that time.

Q. That was the policy?

A. Yes.

[fol. 78] Q. In other words, while Safety Glass Company furnished the material and did the labor of boxing, it did not charge for that material or labor?

A. No.

Q. But that in some instances, at least, Pittsburgh Plate did charge an amount for material and labor in boxing to the customer, and that the amount received by Pittsburgh Plate Glass Company for that material and labor was not credited to Pittsburgh Safety Glass Company or Duplate Corporation?

A. That is true.

Q. And that was done because of an agreement between Pittsburgh Safety, afterwards known as Duplate, and Pittsburgh Plate Glass Company?

A. Yes.

Q. Were these various agreements with respect to commissions and any other items of charges contained in any written agreement between Duplate or Safety Glass Company and Pittsburgh Plate Glass Company?

A. I can't answer that. The matters were usually taken up by Mr. Spahr or Mr. Wherrett, or someone else in authority. Whether there was anything written on this I can't say.

Q. How would we find that out, as to whether there was anything?

A. By inquiring of Mr. Spahr.

Q. Will you ask Mr. Spahr whether there was any written agreement made between Pittsburgh Safety and Pittsburgh Plate, with respect to commissions or any other matters relating to charges to be made against either or both of those parties, and if there were such written agreement, I would like to have it produced.

A. Yes.

(Recess until 1:30 o'clock P. M.)

[fol. 79] Afternoon Session

C. L. McHenry, resumes the stand:

Direct examination (continued).

By Mr. O'Shea:

Q. Mr. McHenry, have you got the names of the officers and directors of the Pittsburgh Safety Glass Company as of the early part of 1928?

A. I have.

Q. Will you state first the names of the officers, and then the names of the directors?

A. Mr. F. B. Davis, Jr., chairman of the board; Mr. H. S. Wherrett, president; Mr. R. L. Clause, vice-president and general manager; Mr. H. B. Higgins, secretary; Mr. W. U. Reissinger, treasurer; Mr. E. A. Howard, assistant secretary; Mr. Edward Pitcairn, assistant treasurer; Mr. Clarence M. Brown, H. S. Wherrett, Robert L. Clause, Harry Higgins, F. B. Davis, Jr., W. U. Reissinger. Now, there is a change made here throughout the year. Mr. Reissinger was taken off on May 5, 1928, and was replaced by A. E. Pitcher, and F. B. Davis, Jr., was taken off, and F. W. Pickard was put in his place, but I don't have the date. Then Mr. McBride was treasurer to May 1, 1928, and he was replaced by Mr. Doyle. Mr. Reissinger was treasurer to 5/28, and he was replaced by Mr. McBride, and after Mr. McBride was Mr. Doyle, and after Mr. Doyle was Mr. Garland—B. R. Garland.

Q. You don't know the date?

A. No. I have the exact date the corporation changed its name to Duplate.

Q. What was that?

A. That was March 8, 1929, changed from Pittsburgh Safety Glass Company to Duplate Corporation; was certified at Harrisburg March 25, 1929.

Q. Was F. B. Davis, Jr., connected in any way with the Pittsburgh Plate Glass Company?

[fol. 80] A. No.

Q. Was Mr. Pitcher connected in any way with the Pittsburgh Plate Glass Company?

A. No, sir.

Q. Was he connected in any way with du Pont Viscoloid Company?

A. He is.

Q. Was and is?

A. Yes.

Q. Was Mr. Pickard connected in any way at that time with Pittsburgh Plate?

A. No, sir.

Q. Was he connected also with du Pont Viscoloid?

A. Yes.

Q. Was Mr. Garland connected in any way with Pittsburgh Plate?

A. No, sir.

Q. Was he connected in any way with du Pont Viscoloid?

A. Yes, he was.

* * * * * * *

Q. The warehouses are a part or department of the Pittsburgh Plate Glass Company?

A. They are the selling agents.

Q. Selling agents in the various localities throughout the country, and might be described as the Pittsburgh Plate Glass Company's distributors?

A. Yes, sir.

Q. And the usual custom, I suppose, in taking the orders, is these warehouses or distributors take the order direct from the customer in their territory. Is that correct?

A. That is true.

Q. And then having received an order from a customer in their respective territories, they make out one of these series forms?

[fol. 81] A. Yes, sir.

Q. So that the pink slip originates in the warehouse?

A. Where the warehouse makes the sale, yes.

Q. Now, the other sales are sales made direct from Pittsburgh's home office to large customers. Is that the fact?

A. Yes, sir.

Q. The home office not handling the smaller customers, or customers having smaller orders?

A. Yes, sir.

Q. That is about the general plan of the selling of this glass?

A. Yes, sir.

* * * * * * * *

Q. Who, in the Duplate Corporation, responded to requests for credit information?

A. Well, there is no one in the Duplate Corporation, as far as I know, because all sales are made to the Pittsburgh Plate Glass Company.

Q. What has the connection between sales to the Pittsburgh Plate Glass Company got to do with the credit information? Credit information would be questions for the purpose of advising the sellers of material to Duplate Corporation.

A. You mean sales to or sales from Duplate?

Q. I understood you to use the word "to," and yet you say there was no one in the Duplate Corporation who gave credit information when it was requested, because all sales were made to Pittsburgh Plate Glass Company?

A. That is true.

Q. You mean, all sales of raw material and supplies were made to Pittsburgh Plate Glass Company?

A. All sales of the product of Duplate are made to Pittsburgh Plate Glass Company. Any local sales, say of scrap [fol. 82] machinery, sold from Duplate, the credit would be passed on by Mr. Pitcairn, who carries the title of assistant treasurer.

Q. I haven't in my mind credit from Pittsburgh Plate Glass Company or Duplate to the customer. I have in mind credit to Duplate. It is not unusual, is it, that in mercantile arrangements or procedure that a mercantile agency, such as Bradstreet's, comes to a corporation and asks for information with respect to the particular company's standing, so as to report to people from whom they are asking credit. The credit I have in mind is the credit which is given to Duplate Corporation, and what I want to know is, who in the Duplate Corporation answered these mercantile agencies when they requested information with respect to Duplate Corporation?

A. That would be answered by Mr. Spahr, the assistant comptroller of the Pittsburgh Plate Glass Company.

Q. Pittsburgh Safety Glass Company, or Duplate, purchased all of its glass from Pittsburgh Plate Glass Company, or substantially all of it?

A. Substantially all of it.

Q. And it is the custom in the glass trade, is it not, to purchase glass in standard sizes?

A. It is.

Q. And similarly the Duplate Corporation invoiced to its customers and Pittsburgh Plate Glass Company invoiced to its customers, laminated glass in the same standard sizes. Isn't that correct?

A. The billing price is based on the standard size it is cut from. For instance, a windshield has a contour taken out, but in billing, charging the customer, the over size is used.

Q. So that in a purchase of a windshield which is susceptible of being cut from a sheet of glass 20 by 30—that is the standard size?

[fol. 83] A. Yes.

Q. Duplate would use a 20 by 30 standard size sheet of glass, and charge the customer at the rate—so much per foot for a piece of glass 20 by 30. Is that correct?

A. There is always some allowance made for edging.

Q. That is an additional charge.

A. If the finished windshield was to be 20 by 30, they would have to have half an inch, in order to get their edge work on before it was down to the finished size of 20 by 30.

Q. But that edge work is charged additional to the standard stock size of glass?

A. Yes, sir.

Q. So that under that system of purchasing glass and selling laminated glass, there is no material loss?

A. It is very small.

Q. Now, in your defendant's statement of account, I notice that you have charged as an item of cost some 3,722,601 feet, for the year 1928, for which your account states that you paid $1,514,254.75; whereas, you have credited yourself with sales amounting to 962,448 feet, and 3 inches, which consists of two sheets of glass of the same size, so that that would make 1,924,896 feet of single sheets of glass, leaving a balance of 1,798,705 feet of glass unaccounted for in this defendant's statement of account. Do you know what the explanation is of that discrepancy?

A. We show on our December balance sheet that we have glass in process $41,083.66; finished glass in stock of $162,282.47.

Q. Have you got your so-called Schedule "J" here for the year 1928?

A. No.

Q. Well, now, you have accounted for the inventory at the end of the year, Mr. McHenry, but that obviously does

[fol. 84] not account for the whole 1,798,705 square feet of glass, does it?

A. No, it wouldn't, because there is a shrinkage throughout the process of manufacturing. I have Schedules "J" for each month of the year 1928.

Q. You have those?

A. Yes, for each month of the year 1928. Here is another item that would also account for where the glass got to. There is a loss in stock of Duplate of $41,826.01, and loss in stock of polished plate of $50,131.98.

Q. Will you turn to the month of September? Get out Schedule "J" for the month of September.

A. Yes, sir.

Q. What are these Schedules "J" that you have?

A. They are abstracts of the stock and departmental accounts.

Q. They constitute a record of your cost department of your costs?

A. Yes, sir.

Q. And they were kept from the beginning of the production of laminated glass by Pittsburgh Safety Glass Company?

A. Yes, sir.

Q. And you have one for each month down to the end of the accounting period?

A. Yes, sir.

Q. Now, in this month of September, I notice an item here called "Order cutting (1/1 to 1st current mo.) & stock loss (current)," and opposite that is the figure 92,038, which figures appear under the column headed "Feet". Does that mean that during the month of September you suffered a stock loss in plate glass of that much feet?

A. The records would indicate that there was a loss in September of 92,038 feet.

Q. Do you know how that came about?

[fol. 85] A. No, I am not prepared to say just how it came about.

Q. Will you be able to define any of the so-called losses and explain them, that appear on those Schedules "J", of your own knowledge?

A. Of the loss in stock, as indicated by this entry here, covered by 92,038 feet, is probably due to making up orders in advance, anticipating orders for that glass. We

did that in the early period, and later on we found that they changed the models of the car, and our glass was lost.

Q. Well, do I understand you wish the Master and the Court to understand now that you made up glass in which you used 92,038 feet, which you afterwards found you could not sell, because of a change in models?

A. I would have to verify it with the factory books before I would want to make a definite answer.

* * * * * * *

Tuesday, May 12, 1931, 10 o'clock A. M.

C. L. McHenry resumes the stand.

Direct examination (continued).

By Mr. O'Shea:

Q. Mr. McHenry, you have produced what we have been referring to in this record as the pink slips, for the year 1928?

A. Yes, sir.

Q. Those pink slips now become white slips. I hand you one of the 1928 so-called order slips or invoices, and ask you if that is one of the slips used by the Duplate Corporation during the year 1928?

A. It is. It is marked "N. S.", which is "non-shatterable." That was the way they marked them, to designate the Duplate invoices.

[fol. 86] Q. This document which you have just identified is on a Pittsburgh Plate Glass Company form?

A. Yes, sir.

Q. So that in the year 1928 the Pittsburgh Safety Glass Company used the forms of Pittsburgh Plate Glass Company?

A. Until they could get their supply made up—printed.

Q. And when was that?

A. That was in June, 1928.

Mr. O'Shea: I offer in evidence the document identified by the witness, and ask to have that marked as Plaintiff's Master's Exhibit 4.

Q. This Master's Exhibit No. 4, as I understand your policies, originated in the Detroit warehouse. Is that a fact?

A. From all indications, there is where it originated.

Q. And that, together with some of the other sheets of the order series, was sent where?

A. To the general office—Pittsburgh Plate Glass Company's general office.

Q. And the only part of the writing that appeared on that Exhibit No. 4 on its receipt at the general offices of the Pittsburgh Plate Glass Company was the typewritten part. Is that correct?

A. Yes, sir.

Q. And where were the extensions of footage and prices put on?

A. The sales department of the general office.

Q. Of Pittsburgh Plate Glass Company?

A. Yes, Pittsburgh Plate Glass Company.

Q. And after that what became of Plaintiff's Exhibit No. 4?

A. You mean, after the sales prices are put on?

[fol. 87] Q. After the sales prices are put on, what did the sales department of the Pittsburgh Plate Glass Company do with Exhibit No. 4?

A. They made an invoice against the Detroit warehouse.

Q. And kept Exhibit No. 4 in their files?

A. Files, yes, sir.

Q. Did it always remain in their files?

A. Yes, sir.

Q. Then a duplicate or triplicate or quadruplicate in the series bearing the same information that appears on Exhibit No. 4 was sent to the Duplate factory. Is that the fact?

A. No; the original was sent to the Duplate.

Q. Original or one of the series was sent to Duplate?

A. Usually the original order was sent.

Q. And did that original have the extensions of footage and prices that appear on Exhibit 4?

A. No, sir.

Q. All it had on it was the typewritten part?

A. Yes, sir.

Q. So that Exhibit No. 4 never passed through the hands of any employee of the Duplate Corporation?

A. It did at the factory.

Q. This Exhibit No. 4, as I understand it, never reached the factory, but the original of it did.

A. That is the original; but when it passed through the Duplate factory, it was not priced.

Q. It was only after it came back from the Duplate factory to the Pittsburgh Plate Glass Company's general offices that it was priced?

A. Yes, sir.

Q. So that Exhibit No. 4 in the condition in which it is now never did pass through Duplate Corporation?

A. No, sir.

[fol. 88] Q. Now, did the Pittsburgh Plate Glass Company invoice the Murray Corporation of America at the price of $3 for the material appearing on Exhibit No. 4?

A. It was invoiced to the Detroit warehouse at the price shown on your Exhibit No. 4.

Q. And how or what department or organization invoiced the Murray Body Corporation of America?

A. Detroit warehouse.

Q. And what did they invoice the Murray Corporation of America at?

A. I am not able to give that information. I do not know.

Q. Your records here wouldn't show that?

A. Our records here wouldn't show.

Q. Well, if you received either directly or indirectly payment from the Murray Corporation of America at the rate of $3 a foot, wouldn't your records here show that?

A. It would show it in Detroit. They would pay the Detroit warehouse for their invoice.

Q. And the Detroit warehouse in turn will remit to the Pittsburgh Plate Glass Company?

A. They would deposit their money collected to the credit of the treasurer of the Pittsburgh Plate Glass Company in Detroit.

Q. And Pittsburgh Plate Glass Company never knows what the ultimate consumer pays?

A. Not unless they go back and trace the invoices.

Q. That is to say, trace the warehouse——

A. Warehouse bills.

Q. Well, the warehouse, of course, is simply a department of the Pittsburgh Plate Glass Company, is it not?

A. Yes, sir.

[fol. 89] Q. Not organized as a separate corporate entity?

A. No.

Q. Now, at the end of January, 1928, an employee of Pittsburgh Plate Glass Company made up one of the so-called recaps, of which Master's Exhibit No. 1 is typical. Is that correct?

A. Yes, sir.

Q. At what price would Master's Exhibit No. 4 appear on the January 1928 recap?

A. $3 a foot.

Q. It would appear at $3 a foot?

A. Yes, sir.

Q. Have you that recap for the month of January, 1928, with you?

A. No, I have not. I also see there is a separate charge here for edging, but the price is marked on the bottom of the bill, $3 per square foot, less 5 per cent.

Q. That is to say, the recap would have the unit sale price and the foot rate?

A. Yes, sir.

Q. And then if there was an additional charge for edge work, that would also appear on the recap?

A. Yes, sir.

Q. Going back to my previous question, have you the recap for January, 1928, with you?

A. No, I have not.

Q. Where would that be?

A. If they retained that, it would be in the files up in the general office, or Creighton probably by this time. At that early date we were not altogether settled on our accounting schedule, so that we could have it standardized, and I am not just sure as to what form that was made up in back in 1928—the recap that you asked for.

Q. Well, do you mean by that that you are not sure at what price Master's Exhibit——

A. I am sure of the price.

[fol. 90] Q. —at which Master's Exhibit No. 4 was entered on the recap for that month?

A. Yes, sir.

Q. And you are sure that would be the $3 unit sales price?

A. Yes, sir, $3.

Q. Now, as I now understand your policy, at the end of the month there was an entry made in the Pittsburgh Plate

Glass Company's books, indicating what it owed Duplate and a corresponding entry made in the Duplate Corporation's books, indicating also what Pittsburgh Plate Glass Company owed Duplate. Is that correct?

A. Those entries would be in the Duplate's books.

Q. And not in the Pittsburgh Plate Glass Company's books?

A. Not in the Pittsburgh Plate Glass Company's books entirely.

Q. How would Pittsburgh Plate Glass Company know?

A. There is a control account in the Pittsburgh Plate Glass Company's books.

Q. Is it from these documents, of which Exhibit No. 4 is typical, or is it from the recap that those cross-entries in the Pittsburgh Plate Glass Company's books and the Duplate books were made?

A. It would be from the recap.

Q. Referring now to Master's Exhibit No. 1, that became a document belonging to Pittsburgh Plate Glass Company, did it not?

A. No, that was always retained in the Duplate's files

Q. And the documents of which Plaintiff's Exhibit No. 4 is typical became and remained in the Pittsburgh Plate Glass Company's files?

A. It remained in the Duplate's files.

Q. This also remained in the Duplate's files?

[fol. 91] A. Yes, sir.

Q. Referring again to Exhibit 1, I call your attention to the fact that there is a description on there, as follows: "Bill No. 40." Whose bill No. 40 is that—the Pittsburgh Plate Glass Company's or the Duplate Corporation's?

A. That would be Duplate Corporation.

Q. That would be their Duplate Corporation bill number?

A. Apparently so. I never knew it was on there.

Q. Then do you know whose bill number it is?

A. No. I said I supposed it was.

Q. Who would know?

A. Mr. Lepore, the man who made it up—Ernest Lepore.

Q. Would Mr. Houser have that information?

A. No, he would not.

Q. I think you told me, didn't you, that Exhibit No. 1 became the basis for the cross-entries in the Pittsburgh Plate books and the Duplate books as well?

A. Yes, sir.

Q. Now, you told me also, I think, that the documents, of which Exhibit No. 4 is typical, remained in the files of Duplate Corporation?

A. Yes, sir.

Q. Will you then please explain how the documents, of which Exhibit No. 4 is typical, could be the original invoice to Pittsburgh Plate Glass Company, since they never received it?

A. They are used in compiling the Duplate reports as well as the Pittsburgh Plate Glass Company's reports.

Q. They are used interchangeably by both companies?

A. Yes, sir.

Q. Did you bring with you the purchase orders for raw material, covering the four that I picked out yesterday, from your large book of purchase orders?

[fol. 92] A. Yes, I have those.

Q. Will you let me have those?

A. Here are the purchase orders, the original invoices, the voucher and the cancelled check for each.

Q. I show you a set of documents which you have produced, and ask you to explain what they are.

A. The first is a copy of the original purchase order, No. 478½, to Rasner & Dinger, for one bag clamp. We then have the original invoice for this bag clamp from Rasner & Dinger Company and receipted voucher, general voucher No. 818, Creighton sub-number 767, for $7.74, and cancelled check No. 680, for $7.74.

Q. The first paper in this series you have designated as the original purchase order?

A. Copy of the original.

Q. The original having been sent to the vendor?

A. Yes, sir.

Q. And this kept in the records of Duplate Corporation as one of its records?

A. In the purchasing department at Pittsburgh.

Q. Purchasing department of whom?

A. Of the Pittsburgh Plate Glass Company.

Q. At Pittsburgh?

A. Yes; as they did the purchasing for Duplate.

Q. Then the yellow sheet in this series you have designated as the voucher of Pittsburgh Safety Glass Company?

A. Yes, sir.

Q. That is kept in the files of the Pittsburgh Safety Glass Company?

A. Files of the assistant treasurer of the Safety Glass Company.

Mr. O'Shea: I offer as one exhibit the four documents identified by the witness, as Plaintiff's Master's Exhibit No. 5.

* * * * * * *

[fol. 93] Q. Mr. McHenry, you have produced a document here. Will you please identify what that document is?

A. This is original order No. 4854, of the Fleetwood Body Company, for eight pieces of Duplate glass.

Q. That is an order to Pittsburgh Plate Glass Company?

A. Yes, sir.

Q. And is the order referred to on Master's Exhibit No. 2?

A. Yes.

Mr. O'Shea: I now offer in evidence the document identified by the witness, and ask to have that marked as Plaintiff's Master's Exhibit No. 2-A.

Q. I show you a document and ask you if you can identify that?

A. This is a copy of invoice from the Pittsburgh Plate Glass Company against the Duplate Corporation for glass purchased by the Duplate Corporation.

Q. I show you another document, and ask you if you can identify that?

A. This is a copy of an invoice from Pittsburgh Plate Glass Company to Pittsburgh Safety Glass Company for glass delivered in the month of June, 1928.

Q. Both of the documents which you have just identified are true copies of the invoices?

A. They are.

Mr. O'Shea: I now offer in evidence the two documents identified by the witness, and ask that they be marked as Plaintiff's Master's Exhibits 6 and 6-A.

Q. Do you know the prices at which du Pont Viscoloid Company sold its pyralin to Duplate Corporation?

[fol. 94] A. Only the prices that are shown on the invoice.

Q. Will you look at those invoices and tell us what that price was?

A. That is billed at various prices, depending on size of sheet, finish and thickness.

Q. Does pyralin have a market price for all purchasers with those variations you have mentioned?

A. I am not able to say.

Q. Would there be anyone in your organization who would know that fact?

A. The purchasing department would probably know what other competitors' prices were—that is, competitors of du Pont Viscoloid.

Q. Do you know whether Duplate Corporation had any agreement or understanding with du Pont Viscoloid Company to buy their—that is to say, Duplate's—pyralin under the market price, if there was a market price?

A. I know of no understanding.

Q. The only one who would know whether there were such an understanding would be someone connected with the purchasing department of the Pittsburgh Plate Glass Company?

A. Or Mr. Wherrett. Mr. Wherrett would know.

JOSEPH HOUSER, a witness produced on behalf of the plaintiff, having been duly sworn, testified as follows:

Direct examination.

By Mr. O'Shea:

Q. Mr. Houser, I show you five sheets, and ask you if you can identify what those are?

A. This is made up by the warehouse——

Q. Just tell what it is. Is it a formed used by the Duplate Corporation?

[fol. 95] A. It is a form used by the Duplate Corporation for shipments. It is an order blank, but at the same time it is used for shipments.

Q. As I understand, it originates in the warehouse?

A. That is right.

Q. And is made out in an original and quadruplicate copies as is indicated in the five sheets?

A. Yes, sir.

Q. Now, after being made out in the warehouse, where does the original go to?

A. The warehouse sends the original, the duplicate, the shop ticket, and the triplicate to the general office.

Q. And keeps for itself the quadruplicate?

A. That is right.

Q. Now, where you say "general office," you mean general office of Pittsburgh Plate Glass Company?

A. Pittsburgh Plate Glass Company.

Q. Now, what does the Pittsburgh Plate Glass Company do with the original, the duplicate, the shop ticket and the triplicate?

A. They keep the triplicate and forward the original and the duplicate and the shop ticket to the factory.

Q. At that point there is nothing on the ticket except the amounts and description of the order?

A. That is all.

Q. No prices?

A. No prices.

Q. When you say "the factory," you mean the factory of Duplate Corporation?

A. Yes, sir.

Q. Now, what does the factory of the Duplate Corporation do with the original, the duplicate and the shop ticket?

[fol. 96] A. The original is kept by the shipping clerk; the duplicate is kept by Mr. Powell up there.

Q. What is his title?

A. What Mr. Powell's title is, I couldn't tell you that.

Q. Is he in the bookkeeping department?

A. He is the head of the production department.

Q. What becomes of the shop ticket?

A. That goes to the shop, to the inside of the factory, to work from.

Q. The shop ticket is used as the order from which the Duplate factory makes up the goods to be shipped on that order?

A. That is right.

Q. And the production manager keeps the duplicate?

A. That is right.

Q. And what did you say becomes of the original?

A. The shipping clerk has the original.

Q. The shipping clerk has the original, and uses the original as his shipping instructions?

A. That is right.

Q. There are no prices on this at that time?

A. No, sir.

Q. The duplicate remains with the Duplate Corporation?
A. Yes, sir.
Q. And the original, what happens to that?
A. It is returned to the Pittsburgh Plate's general office.
Q. Are the prices then put on the original?
A. Yes, sir.
Q. By whom?
A. By the man in charge of pricing.
Q. And who is he?
A. Why, at present it is Mr. Ross and Mr. Donaldson.
[fol. 97] Q. And they are employees of what company?
A. Pittsburgh Plate Glass Company.
Q. And as I understand it then, an employee, after the prices are put on the original, an employee of Pittsburgh Plate Glass Company uses this original to make cross entries in a ledger belonging to the Pittsburgh Plate Glass Company. Do you know whether that statement is the correct statement of the facts?
A. Well, what this is used for—it is billed right on that ticket. After the prices are on that, it is figured out—everything complete is figured out.
Q. The total is figured out of the prices?
A. The total, and then, it is placed in a binder for the accounting department.
Q. Accounting department of what company?
A. Pittsburgh Plate Glass Company.
Q. And then is posted by the employees of Pittsburgh Plate Glass Company to a ledger in the Pittsburgh Plate Glass Company?
A. Yes, sir.
Q. And similarly posted by an employee or employees of Pittsburgh Plate Glass Company to a ledger of Duplate Corporation?
A. Well, how it is posted——
Q. If you don't know, say so.
A. I don't know that.
Q. You do know, however, it is posted in a ledger of Pittsburgh Plate Glass Company?
A. Yes, sir.
Q. Is that the customers' ledger or a general ledger?
A. Well, it is—just what it is I don't know.
Q. You don't do the work?
A. I don't do the work.

Q. All you know is, it is a ledger, and all you know of that is from your contact with that department?

A. Yes, sir.

[fol. 98] Mr. O'Shea: The documents, consisting of five sheets, and described by the witness as the order blank and shipping instructions, is offered in evidence as Exhibit 7, with the request that the pink slip be marked 7, duplicate 7-A, shop ticket 7-B, and triplicate 7-C, and the quadruplicate 7-D.

Q. What position do you occupy?

A. Billing.

Q. For the Pittsburgh Plate Glass Company?

A. Yes, Pittsburgh Plate Glass Company.

Q. Do you know anything about the manner in which Exhibit No. 1 is used or treated?

A. No.

E. A. Lapore, a witness produced on behalf of the plaintiff, having been duly sworn, testified as follows:

Direct examination.

By Mr. O'Shea:

Q. Are you an employee of Pittsburgh Plate Glass Company?

A. Yes.

Q. And what position do you occupy there?

A. I am general bookkeeper for the Duplate Corporation, and Colonial Chemical Division.

Q. You work for the Pittsburgh Plate Glass Company as the general bookkeeper for the Duplate Corporation?

A. Yes, that is right.

Q. Are you familiar with Plaintiff's Exhibit No. 1?

A. Yes.

Q. That is what is called in your organization as a recap of monthly sales?

A. No, that is not the recap.

Q. You describe what it is.

[fol. 99] A. That is the bill against the Pittsburgh Plate Glass Company.

Q. That constitutes a bill against the Pittsburgh Plate Glass Company?

A. That is right.

Q. Whose bill?

A. Duplate Corporation's bill.

Q. And to what books do you post that? It is posted in some book, is it not?

A. Yes, it is placed in the general ledger of the Duplate Corporation.

Q. You say "placed." Do you mean posted?

A. Yes, posted. The Pittsburgh Plate Glass Company is charged and the various accounts are credited there. That is, there are accounts carried for each one of the different kinds of glass on there.

Q. And the various entries on Exhibit 1 are posted into the books of the Duplate Corporation?

A. That is right.

Q. Are they posted any place into a book of the Pittsburgh Plate Glass Company?

A. Yes.

Q. Do you do that work, too?

A. No.

Q. Who does that work?

A. Well, that is handled by two men—Mr. Fleming and Mr. Lazer.

Q. Do you know what that posting consists of; that is to say, the posting from Exhibit 1 to the Pittsburgh Plate Glass Company?

A. You mean, in the Pittsburgh Plate Glass Company's books?

Q. Yes.

A. Well, it is merely placed in there as a credit to the Duplate Corporation.

Q. As a credit to the Duplate Corporation?

A. Yes.

[fol. 100] Q. And the notation on there, "Bill No. 40," indicates that to be the bill of the Duplate Corporation?

A. That is right.

Q. And is addressed, of course, to Pittsburgh Plate Glass Company?

A. Yes.

Q. Did you make this up?

A. Yes.

Q. And from what do you make it up?

A. The sales tickets are analyzed monthly, and of course if we make an item of each ticket, it will take quite a bit of space there, so all prices are grouped together and extended on one bill. That is this bill.

Q. Where you speak of sales tickets, you refer to——.

A. The order ticket.

Q. You refer to the tickets which are marked in this case as Master's Exhibits 2 and 3?

A. That is right.

Q. And which come in in large numbers each month?

A. Well, they come in daily.

Q. And each month there is an accumulation of a large number of them. Is that correct?

A. That is right.

Q. And you summarize what appears on the face of each of those?

A. No; what appears on the back.

Q. You don't summarize what appears on the back on that one?

A. Yes; total amount of invoice less 3 per cent.

Q. Is that what this is?

A. Yes. You will find down there so many feet for a certain amount, less 3 per cent., which will be the gross amount on this.

Q. The summary of the front?

A. Yes.

[fol. 101] Q. So that you really summarize both the front and the back?

A. Yes.

Q. Are they in all cases identical?

A. No; there are a few exceptions in there.

Q. What are those exceptions? Just describe what the exceptions are.

A. Well, in the case of warehouses, the Pittsburgh Plate Glass Company bills their warehouses at a discount of 3 per cent., and in some cases where the order is not handled by the warehouse—that is, they ship direct and the order is handled in the Pittsburgh Plate Glass Company's general office, the order goes out direct, and on the back there would be a discount which would make a difference of the discount on the back. I think that one you had there was an instance of that.

Q. Which one?

A. This first one you showed me. The Fleetwood, you will notice on the face—there is no discount on the back. It says, total amount, 3 per cent.

Q. That statement on the back, "Total amount of invoice, less three per cent," means that the 3 per cent. has been granted to the customer?

A. No; to the Pittsburgh Plate Glass Company. The customer doesn't get that.

Q. In these warehouse cases, as is typified by Master's Exhibit No. 3, you don't carry over into Master's Exhibit No. 1, the boxing charges?

A. No.

Q. This Plaintiff's Exhibit No. 1 is the invoice from Duplate to Pittsburgh Plate Glass Company, is it not?

A. Yes, sir.

Q. Now, there are cases, as I understand, such as is typified by Master's Exhibit No. 2, where the order comes direct from the customer to Pittsburgh Plate Glass Company's general offices, and does not go through one of Pittsburgh [fol. 102] Plate Glass Company's warehouses?

A. That is right.

Q. And such case as that is typified by this Master's Exhibit No. 2?

A. That is right.

Q. Now, in such cases as that, who makes up the form?

A. The form is made up in the sales office of the Pittsburgh Plate Glass Company and at the general office. They have a sales office up there.

Q. Is that made up in an original and duplicate, triplicate, shop ticket and quadruplicate?

A. The quadruplicate in those instances is left off.

Q. And in those instances of orders direct to the Pittsburgh Plate Glass Company, then the Pittsburgh Plate Glass Company keeps these triplicates in its office?

A. Yes.

Q. And the other three are forwarded to the Duplate factory, and the system from there on is as it is in the case where it originates in the warehouse?

A. Exactly the same.

Q. The Pittsburgh Plate Glass Company's invoice to its customer is taken from a sheet such as Master's Exhibit No. 2?

A. Yes. Mr. Houser handles that. It is typed right from that.

PHILIP F. DATZ, a witness produced on behalf of the plaintiff, having been duly sworn, testified as follows:

Direct examination.

By Mr. O'Shea:

Q. What is your occupation?

A. At the present time, chief accountant at Ford City, Pittsburgh Plate Glass Company.

[fol. 103] Q. Were you employed by——

A. Pittsburgh Plate Glass Company and the Duplate Corporation, as chief accountant.

Q. Were you employed by the Pittsburgh Plate Glass Company in the year 1928?

A. I was.

Q. In what capacity?

A. As chief accountant.

Q. And you were located where?

A. Creighton.

Q. Are you familiar with the so-called Schedule "J" constituting one of the records of Pittsburgh Safety Glass Company?

A. I am, yes, sir.

Q. Did you make up those so-called Schedules "J"?

A. I did.

Q. And from what source did you obtain your information, with respect to Schedule "J"?

A. For feetage, production feetage, through physical inventory, and for value through labor and material purchased. The form "J" constitutes the feetage and value.

Q. Did you then post the information obtained in Schedule "J" to a book kept in the accounting department?

A. Books of original entry—the sundry journal.

Q. You posted from Schedule "J" to the sundry journal?

A. Yes, sir.

Q. Now, will you turn to Schedule "J" for the month of September, 1928?

A. Yes, sir.

Q. I call your attention to an entry on that schedule, which reads as follows: "Order cutting and stock loss," and opposite that, "92,038 feet."

A. Right.

[fol. 104] Q. Will you explain what is meant by the phrase "Order cutting and stock loss"?

A. Polished plate is bought and placed in stock; then it is cut in the cutting department for the assembling department, and any loss that we have in breakage there, due to the handling or defective cutting, is charged to this "order cutting loss."

Q. Why is it necessary to cut the glass?

A. Glass is bought in a size just a little above the required finished windshield, and due to the process of pressing, there may be shrinkage there.

Q. You are not up to the pressing department yet.

A. I know; but you asked why it is bought in that size, why there is that loss. That is why.

Q. I asked you why there is any occasion for any cutting loss in the stock department?

A. Well, it is carried in the cutting department. All of our glass is cut in this cutting department before it goes to the assembling department.

Q. It is first in stock?

A. Yes, it is first in stock, and then it is taken out of that stock and cut. The stock is carried in the cutting department.

Q. So all the cutting losses are charged to the stock department?

A. To the stock department; yes, sir.

Q. And are we to understand from that entry in Schedule "J", for the month of September, 1928, that you sustained losses to the extent of 92,038 feet?

A. Yes, sir.

Q. Do you know how much of that was due to cutting?

A. That would be hard to say. That was carried as one record.

Q. And was that glass entirely destroyed.

A. Yes, sir.

[fol. 105] Q. Was there no possibility of salvaging any part of it?

A. That part is not sold, it is reclaimed as cullet, and returned to the Pittsburgh Plate Glass Company.

Q. It is reclaimed as cullet and returned to the Pittsburgh Plate Glass Company?

A. Yes, sir.

Q. Do you receive a revenue from that?

A. Yes, sir.

Q. What is the rate of the revenue?

A. That I don't recall. It is so much per ton.

Q. Now, Mr. Datz, I don't quite understand how you could obtain a loss of this magnitude from your stock, simply because of the cutting operation. Can you describe to us what the cutting operation is?

A. Yes, I can. That depends on the size of the windshield. The glass is bought a little larger than the actual size required; then two plates are cut down to be matched equal, and included in this figure might be an inventory adjustment, shortage of glass, which we consider as a stock loss.

Q. In other words, do I understand you to say now that included in the 92,038 feet might be an error to the effect that while you thought you had received and had in stock some part of the 92,038 square feet, when you came to make a physical inventory, you found you did not have that much glass in stock?

A. We did not.

Q. Is my statement correct?

A. This far: not that we had thought that we had received it; we actually received it, but upon taking a physical inventory we found that the stock might have been broken in previous months, but to adjust our records to the physical inventory, we include this shortage.

Q. Well, this all relates to the current month, doesn't it? Look at your records.

[fol. 106] A. It relates to the current month, inasmuch as we have adjusted to our physical inventory in this particular month.

Q. You had entries, of course, in previous months, for breakage?

A. Yes; but not including an inventory adjustment.

Q. But the fact is, you had previous entries for breakage which are not called breakage. Will you look at your previous month, and see if that is not the fact? Take May.

A. That includes breakage in the month of May.

Q. How many feet?

A. You mean the breakage alone?

Q. Yes.

A. 5861 feet.

Q. Of breakage in the month of May, for 1928?

A. Yes, sir.

Q. Now, take June. What is the breakage on there?

A. 1928 feet.

Q. July, what was the breakage?

A. 984 feet.

Q. Now, getting back to September again, I wish you would look at the entry on your Schedule "J" for September, and explain to me what is meant by the entry there which reads, "Order Cutting (1/1 to 1st current mo.)," and opposite that entry the figures 1482.

A. Order cutting and stock loss, 1/1 to first current month—"mo." abbreviated for "month"—this form "J" is an accumulative form "J"; that is, accumulative abstracts of stock in departmental accounts, and we carry our figures forward from month to month.

Q. So it means from the first of January, 1928, to the first of the current month, your inventories were presuma-
[fol. 107] bly correct, and that the loss occurred from the first of the current month through that month, does it not?

A. Well, 1482 feet did not cover the entire loss from the first of the year until the first of September.

Q. Well, does not that seem to indicate that it did?

A. That is the loss reported and this loss——

Q. What is the loss?

A. 1482 feet. That is the loss that was actually reported; but the actual loss, after physical inventory was taken, was found to be an additional figure of 92,038 feet.

Q. You can't tell when that occurred, whether it was in the current month or some other month?

A. That may be in any of the previous months.

Q. It may be, but you don't know it is?

A. No.

Q. The only information you know is that your records show that during May, June and July, January, February and March, that you had a reported loss of 1482 feet, and that when you came to close your books as of September 30th, you had an additional loss of 92,038 feet?

A. That is right.

Q. That is all you know about it?

A. That is all I know. That substantiates the statement I made before.

Q. Now, is it not a fact that you had a physical inventory at the end of September, 1928?

A. Yes, sir.

Q. Do you remember that fact?

A. We did take a physical inventory.

Q. How often do you take a physical inventory?

A. Once a month we were to take a physical inventory, but due to being short-handed up there, there wasn't any physical inventory taken.

[fol. 108] Q. Until September?

A. Until September—and the fact the stock might not be in any condition to take a physical inventory.

Q. Why would the stock not be in condition?

A. Due to the method of operating.

Q. You have a stock loss there?

A. It may have been in the stock room, and it may have been in the tunnel from the Pittsburgh Plate Glass Company to the Pittsburgh Safety Glass Company, as this glass was transported probably half a mile from the Pittsburgh Plate to the Pittsburgh Safety.

Q. You mean by that that it was possible it was not received by the Duplate?

A. It was all actually received, because it was not paid until it was checked against the receiving record.

Q. And of course if it were broken in transit in this half mile——

A. That was replaced by the Pittsburgh Plate Glass Company.

Q. The only breakage that the Duplate Corporation would be responsible for would be after delivery?

A. After delivery.

Q. Now, coming back to this cutting loss again, how did you determine whether the loss was cutting or breaking?

A. Through a record that was kept at the plant.

Q. Is that a current record?

A. I am not familiar with the records they are keeping at the present time.

Q. I mean at this time.

A. At this time—yes, it was a current record at that time.

Q. From day to day?

A. Yes, from day to day; reported by the inspectors, showing the original size of the glass paid for, and the size [fol. 109] of the cut from the original size, the balance being the cutting loss.

By the Master:

Q. What do you cut that glass with, Mr. Datz?
A. Do you mean the tool?
Q. Yes.
A. For a while they used the diamond, and then they used also the Red Devil Wheel.

By Mr. O'Shea:

Q. Now, Mr. Datz, of course, in the sale of laminated glass, you charge for the full block size, as testified to by Mr. McHenry yesterday, so that ordinarily there is no cutting loss in the glass. Is that a fact?
A. We charge for the size of the glass that is ordered by the customer, but we would have to order in many cases glass in excess of the size ordered by the customer.
Q. Excess quantities?
A. Not in quantities—in size. You would have to allow certain dimensions for this cutting. For instance, in cutting the contour, you would have to allow a little bit to get that contour for your corners.
Q. But you charge for the full size to your customer?
A. Not in the size we bought from the Pittsburgh Plate Glass Company.
Q. Didn't you buy in standard sizes from the Pittsburgh Plate Glass Company?
A. No; sizes cut to order.
Q. You bought in sizes cut to order?
A. Yes, sir.
Q. Aren't those sizes cut to order standard sizes of glass?
A. I will illustrate: A windshield 15½ inches wide, 48 inches long—I will change that. I will make it 16 inches [fol. 110] wide, finished size 16 inches wide, 48 inches long. To cut that glass, we would have to buy from the Pittsburgh Plate Glass Company a 16½ by 48. We would bill the customer for finished light 16 by 48. We would have a loss there, due to the method of billing by the Pittsburgh Plate Glass Company, of an inch and a half. They would charge us for the next bracket size there, which would be 18 inches.
Q. Who would charge you? The Pittsburgh Plate Glass Company would charge you for 18 inches?
A. Yes, 18 inches.

Q. Don't they have a 16-inch?

A. They don't carry a 16½-inch in stock. They carry an 18-inch in stock and cut it out of an 18-inch.

Q. As a matter of fact, when you sell a 14⅛ by 46⅛ finished light, you charge the customer for a 16 by 48 piece of glass, do you not?

A. Yes, sir.

Q. And similarly, when you make a finished light of 15⅛ by 47⅛, you charge the customer for a piece of glass 16 by 48?

A. Yes, sir.

Q. Now, then, it is in only rare instances that there is a situation where you have a finished light 16 by 48, which you cut from a higher bracket?

A. That all depends on the size ordered by the customer.

Q. I say, those are rare instances?

A. I don't know.

Q. It would have to be exact to even an inch?

A. If they order a 16 by 48, you give them 16 by 48.

Q. And charge them 16 by 48?

A. Yes. But we would buy, as I said before, an 18 by 48, to furnish that light.

Q. Well, what is the highest standard size that the Pittsburgh Plate Glass Company makes?

[fol. 111] A. That I couldn't say. I am not familiar with the brackets that they carry.

Q. Well, what is the next bracket that they carry above the 16 by 48?

A. It would be an 18 by 48.

Q. So if you had an order of 18 by 48, you would use the light that they furnish you in the higher bracket?

A. If we happened to have it, yes.

Q. Well, you would have it, wouldn't you, in an efficient organization? If you had any substantial orders, 18 by 48, or if the laminated glass customer was demanding orders of finished lights 18 by 48, and the glass company supplied glass at those dimensions, 18 by 48, you would keep orders with the Pittsburgh Plate Glass Company at 18 by 48, wouldn't you?

A. For that particular order, yes.

Q. For that order?

A. Yes.

Q. There would be no cutting loss, then, in either 18 by 48 or 16 by 48?

A. There would, in this particular order.

Q. Which particular order?

A. Speaking of this 16 by 48, you would have to order an 18 by 48 to get the size out.

Q. Why?

A. Sixteen wouldn't be wide enough to cut your glass out.

Q. You would order 18 by 48?

A. Sure.

Q. Now, then, having that on hand, and you had orders from customers, for 18 by 48, you would use 18 by 48?

A. We wouldn't have orders from customers for that size. When we order 18 inches, that is ordered for a specific order, not to be applied on another order.

[fol. 112] Q. You mean, you don't keep this standard size in stock?

A. No, sir.

Q. You could keep them? Your source of supply was right under the same roof in this period, wasn't it?

A. That is the policy of Pittsburgh Plate to carry these stocks? We don't govern their stocks. They carry the stocks they think are best and are going to be used.

Q. Do you know if the Pittsburgh Plate carries an 18 by 48?

A. They carry that in stock if they are able to produce it.

Q. Well, are they?

A. They are at times, depending on the quality of the glass they get out.

Q. What has the quality of the glass got to do with the size of it? We are talking about sizes.

Mr. Christy: This is immaterial.

A. That is part of the plate glass business to get your different sizes out of the sheets that you actually cast and roll and polish.

Q. Well, the Pittsburgh Plate Glass Company has different bracket sizes, has it not?

A. Yes, sir.

Q. And the laminated glass business sells its glass at those bracket sizes. Isn't that a fact?

A. Yes, sir.

Q. So that except in extraordinary cases, there is no necessity for a cutting loss?

A. That all depends on the size.

Q. Now, as a matter of fact, in this glass which you have in your Schedule "J" for September, and which you designate as a cutting and stock loss, that is glass that never got into laminated glass and was never sold as laminated glass. That is correct, is it not?

[fol. 113] A. That is correct.

Q. Now, on that Schedule "J," down in the assembling department, you have an additional loss for September. Is that correct?

A. Yes, sir.

Q. And that too is designated as an order cutting and stock loss. Is that right?

A. You are referring to the 11,000 feet?

Q. No, I am referring to the 486 feet and 9 inches.

A. In what month?

Q. September. Let us pass that up. In the pressing department on your Schedule "J," it indicates an additional loss of 113,904 feet and 7 inches. Is that correct?

A. That is correct.

Q. Now, that is double lights?

A. That is right; that is double lights.

Q. So that the total glass in that would be twice that?

A. Right—227,000 feet.

Q. 227,000 plus?

A. Yes.

Q. And in that as well would be an alleged loss for celluloid?

A. Right.

Q. Now, going down to your edging department, that Schedule "J" for September, 1928, shows losses of how much? It is in several items there, is it not?

A. Yes, it is.

Q. And what do they total up?

A. Current month, edging department loss is 24,828 feet plus.

Q. So that on your Schedule "J" you lost out of stock, in one way or another, 92,038 feet of glass, and you lost in the pressing department 227,000 square feet of glass, and

you lost in the edging department 49,000 square feet of glass plus.

[fol. 114] A. Right.

Q. Now, all those losses were due to order cutting and stock losses all the way through?

A. No, sir. Operating losses; after the cutting department, the balance are operating losses.

Q. So that in the total of that month what were glass losses stated in square feet, from your Schedule "J"?

A. You mean, you want my total from Schedule "J" here?

Q. I want to know what Schedule "J" shows as the total loss of glass during the month of September?

A. Up until the finished stock—that doesn't include the loss in stock on finished stock—that is, operating alone—369,502 feet.

Q. Now, how much did you lose in finished stock?

A. In glass feetage?

Q. Glass feetage.

A. There isn't any shown in that particular month.

Q. You didn't lose any?

A. No.

Q. What was your production in that month, as shown by Schedule "J," in glass feetage?

A. Passed to finished stock, in glass feetage, 432,478 feet plus.

Q. So that in that month you produced 432,478 feet plus, and in the same month you lost 369,502 square feet of glass?

A. Right.

Q. Now, in your pressing department losses, your cost system provided for the taking out of process of such amounts as are shown under the pressing department losses?

A. Yes, sir.

Q. And on your cost system there, you give no value to that glass that is taken out of process?

A. Right.

[fol. 115] Q. Now, that glass which in the month of September, 1928, amounted to 113,904 square feet of laminated glass at that point was never sold, was it?

A. No, sir.

Q. And the same is true in the losses listed there in the edging department, amounting to 24,828 feet, and when I

say "there," I refer to the Schedule "J" for September, 1928.

A. That is right.

Q. That was taken out of process at the edging department and never sold?

A. At this point.

Q. Was it ever sold?

A. That is hard to say. It may have been placed in stock and cut down to a smaller size.

Q. Will you look at that and find out whether you ever took it back at its value?

A. To identify this particular glass that was taken out here would be almost impossible to say; but we have reclaimed the glass and put it back into operation.

Q. You have some salvage in there, you mean?

A. Yes, sir; at a value.

Q. And the whole salvage amounts to 5860 feet. Is that right?

A. Yes, sir.

Q. Now, that was all you put back into process?

A. Not from this loss.

Q. From any loss, all through the whole month, all that you salvaged from all that 369,502 square feet was twice 5860 square feet?

A. That is right.

Q. That was all you salvaged out of all the losses at this particular point?

A. At this date. It may have been salvaged at some future date.

Q. If it was salvaged at a future date, it will appear on a later month?

[fol. 116] A. Right.

Q. Up to this point, the only thing that was salvaged is the twice 5860 feet?

A. Right.

Q. And all the balance is glass that was never sold?

A. Never sold.

Q. Now, take your next month, October, 1928. You have the stock loss there that you designate as stock loss only. Is that correct?

A. Yes.

Q. Will you explain what a stock loss is?

A. It would be a breakage in the actual stock.

Q. Only breakage?

A. Yes, sir; breakage only in the handling.

Q. That breakage amounted in the month of October to 14,567 square feet. Is that right?

A. Yes, sir.

Q. You didn't get a bull in the stock room that month?

A. I don't know. That can happen in the glass factory.

Q. It can?

A. Not a bull, but somebody with an electric truck.

Q. Did that happen?

A. I don't know that it happened, but it can happen, that a man can bump over with an electric truck occasionally.

Q. Occasionally?

A. Yes, sir.

Q. What do you consider occasionally?

A. Not being an operating man, I don't know how often it happened, but I do know that it does happen.

Q. You can define the word "occasionally", whether you are an operating man or not. Once a month would you call occasionally?

[fol. 117] A. Oh, no. I wouldn't say once a month. It may happen once or twice a week, and again it may not happen again once in two weeks.

Q. Do you think it would happen once in two weeks?

A. That I can't say.

Q. If you were employing a man who was knocking over a rack of glass once in two weeks, destroying 14,567 feet, what would you do with him?

A. Fire him.

Q. Now, in your so-called cutting department for that same month of October, 1928, you suffer a loss of 23,801 square feet.

A. Right.

Q. How is that entered?

A. As cutting loss, explained before.

Q. I mean on there. It just says "cutting loss"?

A. Cutting loss.

Q. And that you define as you defined before, that the cause of the necessity of cutting——

A. Larger brackets.

Q. Larger brackets down to smaller brackets?

A. Right.

Q. Now, in your pressing department that month, you had a loss of 99,529 square feet of laminated glass?

A. Laminated glass, yes.

Q. So that the glass loss would be double that?

A. Right.

Q. Now, here again, this 99,529 square feet was taken out of process at no value?

A. That is correct.

Q. Although the original glass had been put into process at the prices which were paid by Duplate to Pittsburgh Plate Glass Company. Is that correct?

A. Yes, sir.

Q. And this 99,529 square feet of glass represents glass also that was never sold?

[fol. 118] A. That is correct.

Q. And in your edging department for that same month, you suffered a loss in laminated glass of 26,136 feet.

A. That is correct.

Q. Which was taken out of process at no value. Is that correct?

A. Taken out of process at no value.

Q. And never sold?

A. Never sold.

Q. And in that month you salvaged 9095 square feet?

A. Right.

(Recess until 1:30 o'clock P. M.)

Afternoon Session

PHILIP F. DATZ resumes the stand.

Direct examination (continued).

By Mr. O'Shea:

Q. On Schedule "J", for October, 1928, you show a loss of 14,567 feet, and call that just stock loss. Is that correct?

A. That is correct.

Q. What is your explanation of that sort of a loss?

A. That is similar loss to what has been shown on the previous forms "J."

Q. You mean, similar to the 92,038 feet in September?

A. Yes, sir.

Q. Well, didn't you say that included in the 92,038 feet for September there was a cutting loss?

A. Yes, sir.

[fol. 119] Q. Well, is there a cutting loss included in this 14,567 feet, which is specified in Schedule "J", for the month of October?

A. Those two figures were kept separate in the month of October, but the combined total of those two figures is the same figure as 92,038 feet shown in September.

Q. We only have one figure so far in October; that is the 14,567.

A. We show specifically between a cutting loss and stock loss, but the combined total of those two——

Q. So that in October you did show, under the heading "Cutting loss," a separate, distinct cutting loss, in addition to the 14,567 feet?

A. That is correct.

Q. So that there is no cutting loss in the 14,567?

A. No, sir; stock loss only.

Q. What do you mean by stock loss, in that case?

A. Breakage in stock.

Q. That all means breakage in stock?

A. Yes, sir; breakage in stock.

Q. Now, 14,567 square feet would constitute approximately a short carload of glass, wouldn't it?

A. I am not able to answer that.

Q. Do you know how much goes into a carload?

A. No, sir, I do not; because I never had any contacts with a carload of glass.

Q. How do you take inventory?

A. Measuring the actual size of the glass, thickness, and the number of plates.

Q. You determine the number of plates by a stick or measure, don't you?

A. No, sir; actual count per plate.

Q. You count the plates?

A. Yes, sir.

Q. How many plates would 14,567 square feet amount to?

[fol. 120] A. That is a rather hard statement to answer right now, because I don't know how many different sizes might be in the 14,000 feet. There might be fifty or seventy-five different sizes in that.

Q. Wouldn't it run up to four, five or six thousand sheets of glass?

A. Assuming now that the average is four feet, which is approximately an average for the windshield sizes, that would run about 3500 plates.

Q. Now, the sheets of glass for windows would be smaller than the windshields, wouldn't they?

A. Not on the average.

Q. Are they bigger?

A. Well, that all depends on the make of the car. You will find there are no two manufacturers use the same size door lights. We call that a door light.

Q. Are the door lights substantially bigger than the windshield lights, any of them?

A. Some are and some are not.

Q. What I mean by substantially, I mean three or four square feet bigger?

A. No, sir.

Q. They don't run as much as three or four square feet bigger?

A. No, sir, they don't.

Q. Do they run as much as two square feet bigger?

A. Offhand, I have forgotten the size of the door lights, and I wouldn't be able to say.

Q. You are sure they don't run as much as four square feet larger?

A. They don't run as much as four.

Q. Would you say they run as much as three square feet larger?

A. Not until I have the size of the door lights.

Q. Is there a typical door light shown on Master's Exhibit No. 2?

A. Yes.

[fol. 121] Q. Would you say those door lights are larger than the windshield lights you had in mind in the previous questions, or smaller?

A. Smaller by one foot.

Q. So then if this breakage of 14,567 feet was for door lights, it would run much higher than 3500 lights, wouldn't it?

A. Yes, it would.

Q. Now, can you give us any help as to how you determined that this 14,567 square feet constituted breakage in the month of October, 1928?

Mr. Christy: Mr. Master, isn't this developing into cross-examination? These are the plaintiffs' witnesses.

Mr. O'Shea: It is all cross-examination.

Mr. Christy: It is unnecessary. The thing is on record.

Mr. O'Shea: I want to try to get some explanation for it.

The Master: The objection is overruled.

Q. (Question read.)

A. Yes. Through a daily record.

Q. You got a report of that, did you?

A. Through our production department we have a daily record of all the glass that is broken in the cutting department.

Q. This isn't in the cutting department?

A. This is in the cutting department.

Q. It is before cutting. You haven't done any cutting on it yet.

A. Our stock is carried through the cutting department.

Q. You haven't done any cutting on it yet?

[fol. 122] A. You are stocking it. You are taking it from the company you are buying it from and putting it into stock.

Q. Such as was broken by cutting is in a separate item on that Schedule "J," and amounts to 23,801 square feet?

A. That was cutting alone.

Q. That was cutting alone? This is breakage?

A. Breakage in stock.

Q. Of the raw glass?

A. Breakage in stock.

Q. Not breakage caused by cutting. Are we clear on that?

A. Yes, sir; clear on that. In handling glass and putting it into stock, I don't care who the company is handling it, they are going to have an excessive amount of breakage in storing that glass, and that is where we get this figure.

Q. Did you have any excessive amount of breakage in the months of May, June and July?

A. The same year?

Q. The same year. Or in the months of February, March, April and May, in the year 1930?

A. In July, there was only shown there 984 feet. That is due to the records that might have been turned in, the figures given to the accounting department as glass broken in stock. However, these other figures are based on physical inventories, that have been taken at the end of the month.

Q. Didn't you take a physical inventory at the end of July?

A. No, sir; probably not.

Q. Go to 1930. Were you taking a physical inventory at the end of the months of that year?

A. Yes, sir.

Q. Let us take May, 1930. What do your records show is the breakage in that month?

[fol. 123] A. Are you referring to the thirty-five feet there —loss in stock?

Q. I am asking you what your record for May, 1930, shows as a loss in stock?

A. Thirty-five feet.

Q. And that you interpret to be breakage, as I understand?

A. Interpret that to be breakage; yes, sir.

Q. And you took a physical inventory in that month?

A. I didn't take the physical inventory in this particular month, but I am certain an inventory was taken in this particular month.

Q. Well, that statement applies to this month up here in 1928, too?

A. In that particular case, I had supervision then over the inventory.

Q. Did you take the physical inventory?

A. No; but the people who worked under me did. I had supervision over it, but in this particular case I didn't have.

Q. But the physical inventory was being taken, and there was somebody having supervision over it in 1930?

A. Yes.

Q. Who was he?

A. The present chief accountant, H. C. Ter Bush.

Q. How long has he been with you?

A. With the Duplate Corporation, you mean?

Q. Yes.

A. Or the Pittsburgh Plate Glass Company?

Q. He is there longer than you, you say?

A. No, not with this concern. He came about March, 1930.

Q. Who was he with before that?

A. Pittsburgh Plate Glass Company.

Q. Well, now, were you there in September, October, November and December, 1929?

[fol. 124] A. Yes, sir.

Q. Well, what breakage did you have during those months? Physical inventories were being taken at that time, weren't they?

A. Yes, sir.

Q. You had supervision over them?

A. Yes, sir. September, 482 feet; October, 450 feet; November, 310 feet; December, 357 feet.

Q. Well, now, you still insist then, after looking at those records, that this 14,567 feet constituted a breakage in your stock department?

A. A breakage or loss in stock and a loss in stock would be considered a breakage.

Q. Well, now, how else would you lose this stock except by breakage?

A. That is the only way you will lose it.

Q. Then it is all breakage?

A. Yes, sir.

Q. It couldn't be anything else?

A. No, it couldn't be anything else.

Q. And you have records from somebody under you, which reported to you that there was that breakage in the stock in that month?

A. Yes, sir.

Q. Where are those records?

A. Creighton, probably in the vault.

Q. Now, in November, 1928, your item on there on the Schedule "J" for that month, is 12,744. That, too, was segregated as stock loss, was it not?

A. I don't check your figure. I have 12,670. It is not a big difference.

Q. Use your figure then.

A. 12,670; also a breakage.

Q. And in that same month you have a cutting loss. Your Schedule "J" indicates a cutting loss at 12,268.

A. Correct.

[fol. 125] Q. Now, turn to December, 1928. Schedule "J" of December, 1928, lists an item of 118,222 square feet?

A. Right.

Q. And what is it called?

A. Stock loss.

Q. Is that breakage also?

A. Yes, sir. I would like to explain that a little more fully, before we decide to call it breakage.

Q. It is not breakage?

A. It is scrapped glass, put into cullet. It is broken up afterwards. During the latter part of 1928, there was a decision made to try to reclaim some of the glass that was returned from the outside customers, to salvage the polished plate glass and use that over again. We separated by a method we had up there 118,222 feet of polished plate glass, and that is Duplate feetage 59,111 feet. This glass was all cleaned, put into stock; but it was found after we carried it in stock for a number of months, that it couldn't be used. The sizes were not large enough to furnish the correct windshields we would need in the sizes we were getting orders for then. This glass was all scrapped, broken up and sold as cullet to the Pittsburgh Plate Glass Company. That is what this one item is of 118,222 feet.

Q. So I understand that item is glass which went entirely through your process and was never sold?

A. This was sold.

Q. You mean, it was sent to customers?

A. Yes, it was sent to customers.

Q. And they returned it to you?

A. Yes.

Q. And I assume, therefore, it was not sold. It didn't get paid for?

A. We might have been paid for some of it; we might not. That is impossible to say right now.

Q. Do you mean to say you delivered some glass to a customer which he returned to you; if he paid for it, wouldn't you give him a credit for it?

[fol. 126] A. We would give him a credit for it.

Q. So that glass was not sold?

A. Under the terms you stated, it was not sold; but at the time it was shipped it was billed, probably paid for, and left in their warehouse, maybe six months, eight months, or a year, and then decided it was bad glass and returned to the factory.

Q. In whose warehouse?

A. A customer's warehouse, any one of the customers we sold to.

Q. You don't mean to tell me you took glass back from a customer after he had it a year?

A. I wouldn't hesitate to say that we did.

Q. Have you got a specific instance that you could name?

Mr. Christy: I object. That is just wasting time.

A. I don't have any specific case.

Q. You don't know whether it was returned or kept for a year or not, do you?

A. If you ask me to give a certain particular case, I can't do that, I don't know; but I do know it has been. But to go back and get that evidence enough to support that statement, would be endless work.

Q. How could you know it unless you had a specific instance?

A. I was there.

Q. Then you would know who returned it, wouldn't you?

A. I don't recall. I have been out of that for some time.

Q. Of course, you know this is December, 1928. On your records it doesn't appear you sold anything prior. You hadn't sold anything in December, 1927, according to your accounting?

A. No.

[fol. 127] Q. You were not in business?

A. A year might have been a little long.

Q. Now, that item of 118,222 square feet doesn't include any breakage at all? That is all goods returned, for which I assume the customer received a credit?

A. That is correct.

Q. No inventory adjustment in there, is there?

A. No, sir.

Q. Now, let us get to January, 1929. On Schedule "J," for January, 1929, you have an item of 61,341 square feet, have you not?

A. Yes, sir.

Q. And how is that designated?

A. It is shown on here as shrinkage, but was cutting loss. Shrinkage is another term used there for cutting loss, in that particular month.

Q. On that same month you have an item called "Cutting"——

A. Stock loss, we have an item there, 957 feet.

Q. So that the 61,000 is all cutting loss?

A. Yes, sir.

Q. Nothing else?

A. Just a moment. I have a pencil notation which has been made since that time. The total shrinkage in that month is 61,341 feet; the stock loss is shown as 957 feet,

but the dimensions on that should be stock loss and cutting loss, 43,609 feet, and the breakage in the assembling department that has been returned back to this department was 18,689 feet.

Q. What do they do in the assembling department?

A. That is where the glass is put in what they call the sandwich before pressing.

Q. And that means you take two sheets of glass of equal size and interpose a sheet of pyralin of the same size between the two sheets of glass, making a sandwich of the glass and pyralin?

[fol. 128] A. That is correct. That is known as assembled glass.

Q. So that on all those schedules "J," where the word "shrinkage" is used, it means a cutting loss?

A. In that particular department. In the polished plate stock department, you mean? You are referring to this department alone?

Q. No; I am trying to see if the word "shrinkage," wherever it is used, means cutting loss.

A. No; in some departments it is an operating loss.

Q. Shrinkage might mean an operating loss?

A. Yes.

Q. Taking up February 1929 Schedule "J," you have an item there of 46,145, which I think is designated as plate glass shrinkage?

A. Right.

Q. What is the explanation?

A. It is designated here as shrinkage alone, 46,145 feet.

Q. What is the explanation of that?

A. Cutting loss.

Q. Although on the same schedule there is a——

A. Stock loss.

Q. Another loss of 317 feet?

A. Right.

Q. Which you define as breakage?

A. Right.

Q. Now, in March you have an item of 31,125 square feet, which is also designated as shrinkage. Is that correct?

A. Correct.

Q. And that you explain to be cutting loss again?

A. No; in this particular month here we have stock and cutting loss, 31,780 feet, and we have shrinkage there of 31,125 feet. It would almost be impossible to segregate those through the various months. It is all a shrinkage, a [fol. 129] loss in stock, whether it is a cutting loss or whether it is a breakage, and if those two figures are combined, you will find your percentage will run about the same throughout the entire operation.

Q. The breakage——

A. The breakage and cutting loss. In some cases, the figures are inconsistent. That is what you are getting at. Now, we have 61,341 square feet in some months, and 31,125 square feet in other months. There is just a possibility, the stock being reported into the office as a cutting loss, might have been reported by some of these people making out the reports who were not clerks. They are only tool workers in the factory, and they might have had it wrong on these figures; but the total of these two figures represents cutting and shrinkage loss in that department.

Q. As I gather, then, you can't tell by looking at Schedule "J" whether the particular figure means cutting loss or breakage, but the total of the two would be that shrinkage?

A. As far as we know. The way the records have been reported in to us is the way we have shown the figures on here for losses; but we account for every foot of glass that is lost throughout the operation.

Q. Let us take May, 1929. The first item of loss on that is 5861 feet?

A. That is correct.

Q. What is that designated?

A. Breakage.

Q. Does it say breakage on there?

A. Yes, sir; breakage.

Q. So that that is clearly breakage, not cutting loss?

A. Not cutting loss. You have a figure of cutting loss on there.

Q. The next item is 8516?

[fol. 130] A. Correct.

Q. That is cutting loss?

A. Right.

Q. Now, in that same month down in the pyralin examination department, that shows a loss of 20,878?

A. Correct.

Q. What is the explanation of that loss?

A. That is a cutting loss in the pyralin department similar to the glass department. You have got your oblong sheets and you have got to cut them into counter sheets, and it is the same thing.

Q. So that in that month you lost 20,000 square feet of pyralin?

A. Yes, sir.

Q. All because of cutting. Is that right?

A. Yes, sir.

Q. Now, jump down to September, 1929.

A. Right.

Q. You have an item there in the pyralin examination department of 53,986. Is that correct?

A. Yes, sir.

Q. What is that called?

A. I have that here as loss examining.

Q. What is the explanation of that entry?

A. Unusable pyralin.

Q. You mean, when you came to examine it you couldn't use it?

A. Couldn't use it.

Q. Wasn't up to specifications, you mean?

A. No, it was not up to specifications, as far as I know.

Q. I mean, is that the explanation, that it was not up to specifications?

A. It was not up to specifications.

Q. Wasn't it your custom to return the goods that were not suitable for use in your business?

[fol. 131] A. If it was not cut to a pattern. If it was in the original oblong sheet and not cut to a pattern, it was returnable, but if it had been cut to size to fit any particular pattern, that was not returnable and was absorbed as a loss by the Pittsburgh Safety Glass Company.

Q. You didn't examine it until you cut it to pattern?

A. We didn't cut it to pattern. It came already cut to pattern.

Q. You ordered from your pyralin source of supply certain cut-to-pattern pyralin, according to certain specifications?

A. Correct.

Q. And when you received it and it was not according to your specifications, you couldn't return it?

A. For the reason it was cut to size.

Q. It had been cut to size, and since it was cut to size, even though it didn't come up to your specifications on the order, you couldn't return it?

A. Couldn't return it.

Q. And didn't return it?

A. And didn't return it.

Q. That, of course, never went into production of laminated glass?

A. In some cases, yes.

Q. What cases?

A. If you could cut a smaller size out of it, we wouldn't throw that whole sheet away.

Q. If you could cut a smaller size out of it, but I assume it either isn't in this 53,986, or if it is, it was salvaged and went into your process later on, and the salvage value was given proper force and effect in your costs, and so forth. Is that right?

A. Yes, sir; that is correct.

Q. As, for example, in that same month, in your salvage item there, it appears that you salvaged some 19,508 [fol. 132] square feet of pyralin, that had theretofore been rejected. Isn't that the fact? That month, September, 1928, shows a salvage of laminated glass to the extent of 19,508 square feet of glass?

A. 17,824.

Q. Well, in any event, the statement is correct?

A. Yes, the statement is correct.

Q. Where your glass or pyralin was salvaged from previous losses, it went back into your production?

A. Yes, sir.

Q. And proper effect was given to that salvaging operation?

A. Yes.

Q. And that salvaged glass, of course, was subsequently sold in due course?

A. Sure.

Q. Throughout all these months, except in rare instances, you have items on those schedules "J" there, designated as pressing department losses. Is that correct?

A. Yes, sir.

Q. That amount of glass and pyralin, as specified under the title, "Pressing Department," was taken out of production at the pressing operation. Is that correct?

A. Yes, sir, at the pressing operation.

Q. That glass, except such as might afterwards have been salvaged, was never sold?

A. No, sir.

Q. Now, there are a few items on those schedules "J" that are listed as carbitol department losses. Is that correct?

A. Yes, sir.

Q. And I take it that that is a continuation of the pressing department, where the salvaged glass gets into the autoclave?

[fol. 133] A. That is prior to going into the autoclave.

Q. What is the carbitol? What was that used for, do you know? Does that apply to this?

A. Sure. You know what the carbitol treatment is.

Q. You say it does. You have charged us with it and credited yourselves with it. I don't know wheher it does or not.

A. It is just an adjunct to the pressing department. It is one more operation for the pressing of glass.

Q. When was that first used? I think it appears first on your records there in September, 1929?

A. I would say yes, in September, 1929.

Q. Mr. Datz, on August Schedule "J", 1929, there appears there an item of 44,260 square feet. It is in the pyralin?

A. Right.

Q. What is that designated as?

A. Cutting loss.

Q. Is that what it says there?

A. It is shown here as loss, shrinkage loss, but it is a cutting loss.

Q. Wherever shrinkage is used in connection with pyralin, that means a cutting loss?

A. It will be a cutting loss, yes.

Q. Now, similarly in the schedules "J" for the respective months, you have losses in almost every month in the edging department?

A. Yes, sir, operating loss.

Q. And that means at that point in the process you withdrew from the process glass to the extent listed in the respective months?

A. As shrinkage.

Q. And subject to salvaging thereafter, which would be reflected thereafter, that glass was never sold?

A. Never sold.

Q. And that is true in your Duplate stock?

[fol. 134] A. You mean, finished stock?

Q. Finished stock.

A. Yes, sir.

Q. There, too, you withdrew from the stock amounts of finished stock which were never sold?

A. Correct.

Q. Except as some part of it might thereafter have been salvaged?

A. Yes.

Q. Would there be any salvage in the finished?

A. That is reflected in the figures there from the salvage department, but the proportion of glass salvaged out of the finished stock and out of the other operations, it would be almost impossible to get those figures.

Q. But in any event, if any were salvaged from any point in the process, it would be reflected afterwards?

A. Yes, sir.

Q. Such as was not salvaged represents glass that was not sold?

A. Correct.

Mr. O'Shea: I ask to have Schedules "J" for the entire period marked Plaintiff's Master's Exhibit 8, for further identification.

Q. Now, Mr. Datz, you said you had these monthly reports of cutting losses available at Creighton. Is that right?

A. Creighton, in the vault.

Q. And also the same thing with respect to the reports on breakage?

A. Yes, sir.

Q. When can I get those, so that I may examine them?

A. That all depends on how they have been stored up there. That is probably almost three years ago, and it is all stored in with the Pittsburgh Plate records, and I don't

know how much you will have to move to get at those. It [fol. 135] may be on the bottom of the pile, and all the Pittsburgh Plate records on top; it may require three or four days to move all the stationery out there, and again they may be handy.

Q. Why are they under the Pittsburgh Plate?

A. We use the same vaults to store all records, We don't have separate vaults to store one and then the other.

Q. Are you guessing how they may be on the bottom?

A. Yes, I am guessing.

Q. On the other hand, they may be on the top?

A. Yes; but assuming they are several years old, you know you pile your records on the top.

Q. Is it going to be a superhuman effort to get these?

A. I don't know the condition of their vaults right now.

Q. I would like to have them.

A. If it is possible, we will get them.

Q. Now, I understand, Mr. Datz, that these schedules "J" were posted to your factory ledgers—or is the reverse true, that you got the information for these schedules "J" from the factory ledger?

A. Got the information for the ledger from the Schedules "J."

Q. In other words, the information that is included on Schedule "J" was then posted into the factory ledger?

A. Correct.

Q. And these books you have brought today are the factory ledgers?

A. Yes.

Q. Will you get those books and trace the postings of September of that 92,000 square feet?

(Adjourned until Wednesday, May 13, 1931, at 10 o'clock A. M.)

[fol. 136] Wednesday, May 13, 1931, 10 o'clock A. M.

GEORGE E. SHARPE, a witness produced on behalf of the plaintiff, having been duly sworn, testified as follows:

Direct examination.

By Mr. O'Shea:

Q. What is your occupation, Mr. Sharpe?

A. Public accountant.

Q. Are you connected with some firm of public accountants?

A. Messrs. Lybrand, Ross Bros. & Montgomery.

Q. Did you have made up, under your supervision, a check-up of the defendant's statement of account in this case of Triplex against Duplate?

A. I supervised it.

Q. You supervised the check-up and made up a report?

A. Yes, sir.

Q. Is this the report that you made?

A. Yes, sir.

Mr. O'Shea: I ask to have the report produced by the witness marked as Plaintiff's Master's Exhibit 9, and that the summarization report upon the examination of the account filed be marked as Exhibit 9-A.

Q. Mr. Sharpe, the account that you filed is segregated into monthly statements, is it not?

A. Yes, sir.

Q. And there is, in addition to those monthly statements, a summarization of the figures that are contained in the monthly statements?

A. Yes, sir.

Q. And the monthly statements, as made up by you, are segregated into individual sales. Is that correct?

[fol. 137] A. The sales schedule is segregated into individual sales.

Q. The sales schedule sets forth the individual sales?

A. Yes, sir.

Q. And these statements which constitute Master's Exhibit No. 9 were compiled from the books of the Duplate Corporation, under your supervision?

A. Yes, sir.

Q. Do the monthly statements constituting part of Master's Exhibit No. 9 state the profits or losses, as determined by your examination on each of the individual segregated sales?

A. Yes, sir.

Q. And each of those monthly statements also includes what you term as an income account?

A. Yes, sir.

Q. And in that income you have established an average per foot cost of the product that was actually sold. Is that the scheme of the account?

A. Yes, sir.

Q. And further, in making up that income account, you have eliminated certain items which counsel for the plaintiff indicated to you that he intended contesting. Is that correct?

A. That is right.

Q. And those items you have listed in the income account under the heading "Contested Items of Cost and Expense"?

A. That is right.

Q. And among those items are the so-called losses which appeared on the Schedules "J" of the Duplate Corporation, which are marked in this case as Master's Exhibit No. 8 for identification?

A. That is right.

Q. And in addition, thereto, under the heading of "Contested Items," you have eliminated from the costs all ex-
[fol. 138] perimental expense, extraordinary expense, the amounts paid to counsel and others for charges in the Triplex case against Duplate Corporation?

A. Yes, sir.

Q. And under that same heading, you have eliminated the commissions paid to Pittsburgh Plate Glass Company for the sale of the Duplate Corporation's product?

A. Yes, sir.

Q. And in what manner have you treated the returned sales in your account, marked Plaintiff's Exhibit No. 9?

A. For that I refer you to page 14, in our summarization, which I think is called Exhibit 9-A.

Q. The manner in which you have treated those returned sales is fully described on that page 14 of Exhibit 9-A?

A. Yes, sir.

Q. The effect of that, as I understand it, is that the returned sales have been eliminated from the account, Exhibit 9. Is that correct?

A. Yes, sir.

Q. So that no charge is made against the defendant for the selling price, or billing price, of the sales that were returned; no credit is given to the defendant for the costs of those goods, and no profit that may have been charged against the defendant in previous months is considered in your account, Exhibit 9 and Exhibit 9-A?

A. That is right.

Q. Is it a fact that the books of the Duplate Corporation, and particularly their cost accounting, was kept on a monthly basis?

A. It was.

Q. And is it also a fact that the cost accounting system of the defendant, Duplate Corporation, used a unit sales [fol. 139] price? In other words, that they sold their goods on a per foot basis?

A. That is right.

Q. And that the defendant's, Duplate Corporation, cost accounting was kept on an average per foot unit basis?

A. That is right.

Q. And you have followed that scheme of unit sales price and average per foot cost price of the sales in the account which you have prepared, and which is marked 9 and 9-A. Is that correct?

A. That is right.

Q. Referring to Master's Exhibit 9-A, page 2 thereof, as I understand it, constitutes a reconciliation between the defendant's statement of account filed with the Master and the report which you have compiled and filed here as 9 and 9-A?

A. Yes, sir.

Q. Now, will you please explain briefly the tabulation appearing on page 15 of Master's Exhibit 9-A?

A. That is sufficiently explained in the headings on those columns. I can't explain it any further than that.

Q. Well, the net result of that tabulation is a showing of the net profits on the basis which you adopted in filing your report listed in months. Is that correct?

A. That is right.

Q. Mr. Sharpe, I show you two schedules, and ask you if you prepared those two schedules?

A. Yes, sir.

Q. Will you just explain briefly what those first two pages are?

A. I had better take the second page first. The second page represents the number of feet of losses, as fully described in the headings on the columns, which totals are the same as appear on the Duplate Corporation's sched- [fol. 140] ules "J." The memorandum at the bottom of page 2 represents the exact wording as it appeared on these Schedules "J," whereas the classification in the

columns is according to our classification, which is contained on our details of contested items eliminated from the account. Page 1 represents the cost of glass lost in process, as calculated by using the area in feet, as shown on page 2, times the average cost of production, up to the respective stages each month, as shown on the Duplate Corporation Schedules "J." I might further add, the paragraph contained on page 17 of my report—this paragraph is headed "Detail of Contested Items Eliminated from Cost of Duplate Sales"—has a short explanation of those items, in addition to what I have said.

Mr. O'Shea: I now offer in evidence these two schedules referred to by the witness, and ask that they be marked as Plaintiff's Master's Exhibit No. 10.

Cross-examination.

By Mr. Christy:

Q. You have referred to the elimination in your account of certain items of cost shown on the defendant company's books, and I understood you to say that you did that under direction of plaintiff's counsel. Is that correct?

A. Yes, sir.

Q. Now, in order that we may take one item for illustration and follow it through, I refer you to page 13 of your general statement, 9-A, in the line of January, 1929, and your detailed statement for that month. As I understand your detailed statement for January, 1929—see page 7—you have eliminated from the defendant's costs, as shown for that month, the sum of $173,792.44. Is that right?

A. That is right.

[fol. 141] Q. Now, referring to the January, 1929, line, on page 13 of your summary, will you please point out how the sum eliminated figures in your profit showing?

A. You refer to the sum of $194,000?

Q. Yes—$194,721.86.

A. I think you want to know why that doesn't agree with $173,792.44?

Q. Referring now to page 13, of your condensed statement, you show a total of contested cost eliminated of $194,721.86. What is the reason for the difference between that figure and that shown on page 7 of your detailed statement of January, 1929?

A. The difference, $20,929.42, is shown on page 5 of January, 1929, statement, under the column headed "Contested Items of Cost and Expense," and represents certain expenses eliminated.

Q. Now, which column, on page 13 of your summary, gives the final alleged profit, as computed by you? That is, is it column 3 or column 4?

A. It is pretty hard to answer that yes or no, because the profits as shown in column 3 are the profits as shown on the income accounts, and the profits shown in column 4 are the profits as computed in individual sales, as shown on the schedule of sales.

Q. Well, which, in your opinion, is correct?

A. The column 3.

Q. Then taking column 3 for January, 1929, showing an alleged profit of $160,981.76, please trace briefly through your accounts how that figure is obtained?

A. That figure is obtained by starting with the loss of $33,740.10, as shown in column 1, and reducing that loss by reason of eliminating $173,792.44 of contested items from cost of sales, as detailed on page 7 of our January monthly statement, and items of expense, as detailed on page 5, of January '29 statement.

Q. Does the figure of $33,740.10, appearing in the first column on page 13 of your summary, for January, 1929, [fol. 142] appear directly on the defendant's books, or is that a result of a computation of your own?

A. That figure is arrived at by a compilation of figures on the defendant's books.

Q. And is that also true of the figure of $194,721.86, in the second column for January, 1929, on the same page?

A. That amount isn't on the defendant's books.

Q. And how did you arrive at it?

A. The explanation of how we arrived at it is explained on page 17 of our summarization, Exhibit 9-A.

Redirect examination.

By Mr. O'Shea:

Q. Mr. Sharpe, on this question of page 13, the first column on that page, and taking the same month that you have been discussing, $33,740.10 is the loss, as I understand it, shown on the defendant's books for that month. Is that correct?

A. It is the loss on gross sales.

Q. On gross sales as shown on defendant's books?

A. It is.

Q. Now, starting from that point, what you did was to eliminate from defendant's costs certain items, and those items are all the losses as shown on Schedule "J" for that month of January, 1929, and all the contested items of expense, such as experimental expense, expense of Triplex patent case, miscellaneous patent expense, Mellon Institute fellowship, commissions paid to Pittsburgh Plate Glass Company, all of which contested items are shown on page 5 of Master's Exhibit 9, for the month of January, 1929?

A. That is right.

Q. All of which amount to $194,721.86, which is shown in the second column on page 13 of 9-A. Is that correct?

[fol. 143] A. That is correct.

Q. Now, the third column on page 13 represents the difference between the first column and the second column. Is that correct?

A. That is right.

Q. So that at that point, instead of having a loss for that month of $33,740.10, you were, in effect, showing a profit at that point of $160,981.76?

A. That is correct.

Q. Then the fourth column represents, it so happens in this case, the net profit? And when I say "net profit", I mean total profits with the deduction of losses, as shown on the schedule of gross sales, the total of which appears on page 3 of Master's Exhibit 9, for January, 1929. Is that correct?

A. That is correct.

Q. So that the $161,680.42 represents the difference between the figures shown on page 3 of Master's Exhibit 9, for January, 1929, which are under the heading "Profits", of $165,828.60, minus the figure appearing under the heading "Losses", of $4,148.18?

A. That is right.

Q. Mr. Sharpe, on page 13, I think you stated that the total of the fourth column on that page, which is $1,751,217.38, represents the claim which the plaintiff here makes of profits against the Duplate Corporation. You have not set down here any specific figure which you have

in mind as the amount of the plaintiff's claim against the defendant company, have you?

A. No, sir.

Mr. O'Shea: In order to clear this subject up, and for the information of Mr. Christy, I wish to state on the record that the plaintiff's claim will be based on the figure on page 15, under the column "D", which amounts to $1,614,665.33.

[fol. 144] Q. And it is true, of course, Mr. Sharpe, that this tabulation or schedule on page 15 was made by you under instructions of counsel for the plaintiff?

A. That is right.

FRANK W. JUDSON, a witness produced on behalf of the plaintiff, having been duly sworn, testified as follows:

Direct examination.

By Mr. O'Shea:

Q. What is your business, Mr. Judson?

A. Glass; sales director of the company—Pittsburgh Plate Glass Company.

Q. Do you hold any position with the Duplate Corporation?

A. We distribute the Duplate Corporation's products.

Q. But do you hold any title or position?

A. I do not; no title with the Duplate Corporation except manager of the Pittsburgh company which distribute Duplate Corporation's products.

Q. I assume, therefore, that the Duplate Corporation pays you no salary?

A. They do not.

Q. Do you know who established the selling prices of Duplate Corporation?

A. Who establishes them?

Q. Who did establish them?

A. Why, I would say that was sort of a conference; three of our officials would get together and we would discuss the question of costs, selling price. It has never been established by any one individual since I have been there.

Q. You say "three of our officials."

A. I should say two or three.

[fol. 145] Q. By that you mean three of whose officials?

A. The approval in our organization on selling prices of glass is usually up to the chairman of our commercial department, Mr. Higgins. That is the way we are organized. Mr. Higgins is practically chairman of the commercial department.

Q. Chairman of the commercial department of the Pittsburgh Plate Glass Company?

A. If we should establish a price, or change a price, if Mr. Higgins were in this country or available, I would consult him before changing the price, as sales director.

Q. Mr. Higgins is an official of the Pittsburgh Plate Glass Company?

A. Vice-president and chairman of the commercial department.

Q. And as I understand you, if the question of establishing the selling price for Duplate Corporation came up, you and Mr. Higgins confer on the matter and come to an arrangement as to what price the Duplate Corporation would sell its goods?

A. Yes, sir. Quite appropriately, I might add, I succeeded Mr. Higgins. He was director of sales and in charge before I came here, so it naturally would follow that way.

Q. Do you know whether Duplate Corporation had any set policies of price to customers?

A. It would establish prices the same as we do. We would sell classes of trade, depending on quantities and sizes.

Q. You did, then, have an established selling price to customers, depending on quantities and sizes?

A. I couldn't say at the time. I remember now this year a new line of glass—to go back three years ago, because I have been in Pittsburgh just three years ago yesterday, I came here about the time when we started to put this on the market. When it was first placed on the market, it was not [fol. 146] possible to classify your buyer or know what you could get for it, or know what the fellow would be willing to pay for it at the start. You were sort of up in the air in establishing prices or finding out what you could sell it at. The prices at the beginning though, of course, were considerably higher than they are at present.

Q. Now, as I understand it, in the beginning of this business, say from January, 1928, until June, 1928, there was

no established price at which goods were sold to the consumer?

A. I would say there was not. It would depend on the detail. There was no certain price for half a dozen people that would be the same, or anything of that kind, or established price.

Q. It varied?

A. It varied somewhat.

Q. And the variations in that period were not dependent on quantities?

A. Yes, they were, to some extent.

Q. What do you mean by "to some extent"?

A. We would take a manufacturer, automobile manufacturer, who could be induced to use this product, to specify it, to help the laminated glass industry. He would buy in large quantities. If you make up large quantities in one size it costs you less than if you would come to our shop tomorrow and want to buy a light of glass for your car. We would stick you right. You would only want to buy that one light. You are not getting it for the trade. You are just getting it personally. In between there is the automobile replacement shop, and automobile dealer, and in a new line you can't very well establish a certain line of prices like you can on window glass. They didn't know anything about the cost in those days.

Q. I find in the early part, in the months of January and February, 1928, your invoices indicate, just as a matter of [fol. 147] refreshing your recollection; for example, I find one invoice here for 259 square feet, which were sold at three dollars, and the next item is three square feet plus four inches, which was also sold at three dollars.

A. The same dealer.

Q. The first one of 259 square feet having been a sale to Murray Corporation of America, and the second one of three square feet, approximately, having been to the Stimson Aircraft Corporation.

A. They are both large users of laminated glass. One is a body builder and the other is an airplane builder. They used laminated glass from the start in making ships.

Q. Those two prices seem to indicate the same price?

A. To the same type of buyer.

Q. To the same type of buyer? In other words, of quantities.

A. In those days, the aircraft company would use as much as the body company, because the aircraft group figured that more important than the body company.

Q. Those two invoices seem to indicate that the purchasers of that class received the same price, irrespective of the quantity involved?

A. Yes, sir.

Q. Now, the Pittsburgh Plate Glass Company's warehouse received that same price, too, did they not?

A. I am not clear on that, but I would say we give our warehouses no benefit over anybody.

Q. There appears to have been an invoice in the same month of either January or February of a sale to one of the Pittsburgh Plate Glass Company's warehouses for seventy-eight feet, which was sold at three dollars, again indicating, I take it, that the same price——

[fol. 148] A. Large buyer. Our own warehouses would naturally recognize the large buyers.

Q. Would a sundry customer be considered as a large buyer?

A. I should say a sundry customer, in our term would not be a large buyer.

Q. I find an invoice here listed as a sale to a sundry customer, for twelve square feet, at the price of three dollars.

A. I think an investigation would prove that term. It might be it would be a body builder or automobile company, because when we were selling the automobile trade at five dollars, our price was almost prohibitive to a retail buyer. To an individual, it would be around five dollars, as Mr. Caulfield knows, at that time.

Q. I find another invoice to a Pittsburgh Plate Glass Company warehouse for twelve square feet and ten inches, at the rate of $1.82.

A. That is lower than they were getting even a month ago, I think. That, you will find, was probably salvage. That was not new glass. No warehouse got $1.82 in 1928, unless it was salvage.

Q. But your invoice shows it.

A. That might have been salvage, I say. We might have cut that out of something that was a reject, or something of that sort.

Q. As a matter of fact, was there an established price based on quantity, or particular customer, in this early period?

A. In that early period we endeavored to get—that invoice—three dollars from what we would call a large buyer. In a replacement shop we probably tried to get three and a half to four dollars. The exact prices I don't remember.

Q. If you were unable to get that price, you took some other price?

[fol. 149] A. I would say not in that early period. Later on, when we found our competitors making all sorts of prices, we had to meet the situation when it came up.

Q. What competitors did you have?

A. The Triplex Company and I don't know how early the Indestructo were in it. I haven't the figures to know how early they were in the game.

Q. Was the Indestructo a very serious competitor in this business at that period?

A. The same as they are at the present time.

Q. Are they a serious competitor at the present time?

A. To this extent: their prices influence a great deal of business; in other words, if they figure our price is higher and they are lower, even though it amounts to only a few pennies, the customer will probably consider it, and they will get the order, even though we don't consider it as good as ours.

Q. Do you know how large a factory they have?

A. A very large factory; but their production is not so large.

Q. Do you know how large a factory they had in March, 1928?

A. I do not.

Q. So far as you know, the only competitors in this business in the early part of 1928, was Indestructo and Triplex. Is that correct?

A. I don't recollect when Libby-Owens got in. The Saftee Glass Company were in it before Triplex. The two main competitors in those days were Triplex and Saftee.

Q. Was Saftee a very serious competitor in those days?

A. Yes, sir; I think we found them in every case practically where we had competition.

[fol. 150] Q. In selling to body builders and automobile manufacturers?

A. Oh, yes; they were much stronger than they are today.

Q. I am asking of these early days?

A. They were much stronger than they are today.

Q. Were they selling to automobile manufacturers and quoting to them?

A. Yes, sir. Selling to the Government and shipbuilders and airplane builders.

Q. I am talking about automobile manufacturers, and body builders?

A. Yes, sir. They still do today, to some extent.

Q. Now, it is a fact, is it not, that the Pittsburgh Plate Glass Company sold the product of the Duplate Corporation to the users at the same price at which Duplate Corporation billed the goods to Pittsburgh Plate, subject to the commission only?

A. Yes; with this qualification: I might answer that quite a number of the large accounts we handled directly, and not through a warehouse, as our records will show. Some accounts we sell directly, and not through a warehouse.

Q. Well, I asked——

A. You said subject to commissions. If we shipped direct, the warehouse wouldn't get a commission.

Q. You mean, if the Pittsburgh Plate sold some glass through one of its warehouses, they wouldn't send Duplate a commission on that sale?

A. Oh, yes. I get your point. I agree with you. I misunderstood you. I thought you got the impression we sold glass only through the warehouses.

Q. No. I have it all before me.

A. Yes, I get your question now.

Q. The fact is, the Pittsburgh Plate Glass Company sold the product of the Duplate Corporation to the consumer or [fol. 151] user of the glass at the same price that Duplate charged Pittsburgh Plate, subject to the selling commission, which was an arrangement between Duplate Corporation and Pittsburgh Plate?

A. As far as I know. My knowledge of the accounting end of Duplate Corporation, as our officials know over there, is very limited.

Q. But you know all about the prices?

A. I know about the selling prices.

Q. In this question of commission, do you know whether the arrangement for commissions between Duplate Corporation and Pittsburgh Plate was a subject of a written contract or not?

A. I do not; no, sir.

Q. You never saw such a written contract?

A. Never saw such, or never heard it discussed.

Q. Were all of the customers treated the same with respect to prices? That is to say, did they all obtain the same price?

A. No, sir.

Q. What customers? Did some customers receive a preferential?

A. A large buyer.

Q. Only those who were larger buyers?

A. A large company. An automobile company would get a lower price than a replacement shop, to replace the glass after it was broken.

Q. Would you consider a customer who had purchased 40,000 square feet in a particular month a large buyer, as distinguished from a customer who purchased 20,000 square feet in that month?

A. No.

Q. They would be in the same class?

A. I would think they would be about the same, depending on the class of buyer and their future prospects. May I add, you haven't discussed qualities at all. There might [fol. 152] be a difference in prices on the grades.

Q. Do you know whether there was a difference in grade between the product sold to Motor Products Company and the product sold to Studebaker Corporation? The Motor Products Company would be for the Hudson Company.

A. Yes, there would be. Studebaker used it completely in the whole car.

Q. But that wouldn't be a question of quality, would it?

A. That wouldn't designate the quality, but there was a difference in price between a company who used it all around and a company who used it only in windshields. The Motor Products Company made windshields only; the Hudson used it only in windshields; they never used it in bodies since they have been in business.

Q. Did the Studebaker use it all around in July, 1929?

A. When they started to use laminated glass, they used it completely in all top models.

Q. That is the higher-priced models?

A. Yes, sir; the higher-priced models. That is what they call the President, I think.

Q. So that you had a different price for large automobile manufacturers, based on whether they used it only in windshields——

A. That is the only instance, I think, where they used it in windshields only. I wouldn't say that as a positive statement, but I think it is the only company where they use it only in windshields.

Q. And Studebaker, starting in July, 1929, used it all around?

A. Yes, sir.

Q. How about the Auburn Company?

[fol. 153] A. The Auburn Company have never adopted it to this date, but are recognized as a large automobile account.

Q. And yet I find in the month of July, 1929, a sale to the Auburn Company at the rate of $1.60, and in the same month, July '29, a sale to the Motor Products Corporation, for a Hudson car, at the rate of two dollars. Wouldn't that seem to indicate a difference?

A. No, it would not. The difference is, the Auburn bought it for taxicabs and cut from rejects, and would get a lower price, which was quoted not only by us but competitors.

Q. Quote a lower price?

A. Yes, on anything they could get from rejects.

Q. This is a higher price?

A. No.

Q. They got about $1.60.

A. And Studebaker got $2.00 in those days.

Q. I find a sale of 109 square feet at $1.60.

A. That was not the original contract. There may have been a sale in between.

Q. It was the ultimate sales price?

A. I mean the original price to Studebaker—I made the price myself—was $2.00; but afterwards there were changes made, due to competition.

Q. $2.00 with a 40 per cent. rebate. Is that right?

A. I don't recollect that particularly. I wouldn't be surprised. Auburn's purchases in those days were entirely for taxicabs, so they wouldn't enter into comparison with the others at all at any price.

Q. So there was a distinction in the character of the car, whether it was taxicab or something else?

A. Auburn in those days wasn't and isn't today, a large buyer of laminated glass.

Q. And it is your opinion that there were no favored prices given to any customers; that all prices depended on quantity and quality?

[fol. 154] A. You say "favored"?

Q. I mean by that, customers in the same class and for the same type of car, received the same price?

A. Not in all instances, no.

Q. There might be some instances?

A. Yes, there might be some instances, but not from a competitive standpoint.

Q. Do you know whether you had any retroactive prices to customers?

A. I think in one or two instances we had.

Q. So that there was a plan, wasn't there, or policy in the company, of allowing a large automobile manufacturer a rebate?

A. Not generally.

Q. In some instances, though?

A. If you will allow me to explain that, if you want me to, I will give you facts. I have in mind two companies who had figured with none of the laminated companies in America, hadn't even discussed glass, except allowing the salesmen to discuss it with them. It so happened both were personal friends of mine, so I am justified in making that statement. These two companies I saw about the same time. They were using regular glass. I approached them with the thought of increasing the demand for laminated glass, and made them a proposition to use laminated glass. They were not interested. I approached them I think a second and third time. In the meantime, no competitor had mixed in in that time. To induce them to use it, we had to give a definite amount of rebate that they could afford to assemble it in these models, to sell to the dealer, and those two we refunded, made a rebate in those two accounts, resulting in both of them adopting it for their top models. One has continued and the other fellow found it too expensive and he quit, even at that; but in those two cases we reduced and went below our costs, probably. [fol. 155] I don't know the costs; I never went into that end of it, but I know we made a specially low price, in the hope that would increase the demand for laminated glass. We had no competition on our prices, were in right, and I nego-

tiated with them and tried to get them, and expected by it we could get them to use laminated glass. The prices we made affected nobody else. It was our own business with them, and I think it kept on for two years.

Q. What two companies were those?

A. The Nash Company and the Studebaker Company.

Q. Didn't you grant rebates to the Hudson Company?

A. We did not, sir. I will say this, as far as I know, it was a set price to the Hudson Company on windshields.

Q. I find an invoice here in July, 1929, which indicates that the product was sold through Motor Products Corporation, Motor Products Corporation being billed at $2.50.

A. Yes, sir.

Q. And that a rebate—I am using the word rebate simply as a definition——

A. That is not offensive in this case at all.

Q. I don't mean to be. A rebate of fifty cents was granted on that invoice?

A. That was to the Hudson Company. The deal was made to the Hudson Company. They were the ones who bought it. The Hudson Company's price was the price you would make that company. The Motor Products Company were simply handling it for the Hudson Company. They were aware of the price we made. They simply bought this glass and put it in the Hudson equipment. Are you sure that is fifty cents? I thought it was forty cents. [fol. 156] Q. It says fifty here, and these are supposed to be copies of the invoices of the books of the Duplate Corporation.

A. That is all right. It occurred to me it was forty cents. If you will permit me, I will add the same thing there. The Hudson Company were induced to use laminated glass by our company, and we had no competition. We handled that the same. That was some time after the other two deals were made, but we influenced the Hudson Company, who had bought of us over twenty years. I don't think they even at that time discussed laminated glass, and we induced them to use laminated glass for the same reason, to increase the consumption of laminated glass.

Q. You don't mean they used laminated glass for twenty years?

A. No. We had been selling them all of their glass, but in giving them any kind of a price, it was done to influence them to purchase laminated glass and use it.

Q. Can you tell us why this rebate was allowed the Hudson Company on sales that were made through Motor Products Corporation?

A. Because the Motor Products Corporation are not automobile builders. The Motor Products and the Ainsworth Company are the large companies making automobile windshields, and they buy wherever they are told to buy by their trade. There was no reason for giving Motor Products and Ainsworth at that time a price on that; because they don't determine where they are going to get the glass. The glass they buy is designated by the people they build for. So, so far as they are concerned, there was no reason to give them any price, any more than anybody else.

Q. Is the explanation this; the Motor Products Company, not being a car manufacturer, you wanted to main-
[fol. 157] tain a particular price to customers of that class, and yet give the benefit of a lower price to the car manufacturers?

A. I would say that would be it. The Motor Products were not interested. They don't care what the price is. They figure the frame and put the glass in for so much. They just buy their glass wherever the other fellow tells them, and they do it today.

Q. I think that was the reason given by Mr. McHenry?

A. Yes, sir. That is the way they prefer to have it done so far as that is concerned.

Q. Now, in September, 1929, I find an invoice here of a sale to the Chrysler Corporation direct, without the intermediary of a windshield builder or dealer, and that invoice indicates a ten cent rebate to Chrysler Corporation. Can you give us some explanation?

A. I don't even recollect the price we made Chrysler at that time. I don't know whether it has any bearing on the case or not. I am prefacing that statement with these remarks. Chrysler is a case where they haven't bought a foot of glass from anybody else in the country, and the price we made them was just to induce them to use laminated glass.

Q. They never bought any glass from any person prior to September?

A. I don't think so; and I question if they have since

Q. It was your thought, Mr. Judson, Chrysler Company never purchased any laminated glass prior to September, 1929?

A. That is my thought, for regular consumption. They may have purchased some to test and see what it looked like. That often happens. I think every large company is interested in any new product they might use, and purchase it for their testing department.

Q. How big would a test order be?

[fol. 158] A. I couldn't say; maybe twenty or twenty-five sets. We shipped twenty-five sets the other day to a company to test it.

Q. If you got over twenty-five sets you think it would be a consumption order?

A. Yes, I would say it would be a consumption order.

Q. Do you know anything about the prices charged Duplate Corporation for its raw glass?

A. I do not.

Q. You don't sell the raw glass for Pittsburgh Plate Glass Company?

A. It is a detail that is handled through the office.

Q. You know nothing about it?

A. I could guess at it, but I don't know.

Q. Who was it that established this policy of granting the rebates to car manufacturers?

A. You mean, I think, in that case—I would object to the word "rebate"; I would say special prices.

Q. All right; special prices.

A. That would be a discussion in the office between the vice-president and myself.

Q. Vice-president of Pittsburgh Plate Glass Company and yourself?

A. Yes, and myself.

Cross-examination.

By Mr. Christy:

Q. Mr. Higgins has always been an officer and director of the Duplate Corporation, also, has he not?

A. Yes, I think he has, from the beginning.

(Adjourned until Monday, May, 18, 1931, at 10 o'clock A. M.)

[fol. 159] Monday, May 8, 1931, at 10 o'clock A. M.

NEILSON EDWARDS, a witness produced on behalf of the plaintiff, having been duly sworn, testified as follows:

Direct examination.

By Mr. O'Shea:

Q. Mr. Edwards, are you connected with the Triplex Safety Glass Company of North America?

A. Yes, sir, I organized the company and got Mr. Haskell interested in it, and I have been vice-president of the company ever since it started.

Q. You testified in the suit on this Benedicts patent which is being sued on here in the District Court?

A. Yes, sir.

Q. Prior to the formation of the Triplex Safety Glass Company of North America, did you make any efforts to interest any other people in the Benedictus patents?

A. In 1925, I tried to sell the Benedictus patents to the Pittsburgh Plate Glass Company; talked to Mr. Wherrett and Mr. Higgins and Capt. Brown, who is now dead, and they told me that they wouldn't be interested in the patents, because they didn't think that the laminated business was ever going to amount to a big enough industry to interest a company the size of the Pittsburgh Plate Glass Company. We talked to the du Pont Company along the same lines, and got the same reaction. I also talked to the Standard Plate Glass Company.

Q. When was the Triplex Plate Glass Company of North America formed?

A. Mr. Haskell and I started the business in the early part of 1926. We went to Europe in January of 1926 and bought the American rights, and ordered the machinery, and started to build the plant immediately. The corpora-[fol. 160] tion actually came into corporate existence in June of '26, which time Mr. Haskell and I were the sole stockholders and the owners of the business.

By the Master:

Q. Is the Triplex Company a New Jersey corporation?

A. Delaware, I believe.

By Mr. O'Shea:

Q. What do you know about the source for glass suitable for use in the laminated glass industry, in and prior to June, 1926?

A. Immediately after the war, I became interested in the plate glass business, and finally organized the National Plate Glass Company, which was a consolidation of the Columbia Plate Glass Company, the Saginaw Plate Glass Company and the Federal Plate Glass Company, and I sold that to the General Motors Company in the end of 1919, and was offered the presidency of that company by Mr. Durant, who was then president of the General Motors, which I didn't accept. Following that, I was interested in the Heidecamp Plate Glass Company for several years, and was a director of it, and later in the Standard Plate Glass Company, and I knew that when we started Triplex there was no one-eighth inch plate being manufactured in commercial quantities in this country. When we started Triplex, we did exactly as the English company was then doing, and bought our glass in Czechoslovakia and other European countries, and that was one reason we located our original plant at Hoboken, and our present plant at Clifton. Before we actually got into production, I talked to the officers of the Pittsburgh Plate Glass Company about their making one-eighth inch plate for us, and was told by Capt. Brown and by Mr. Wherrett that when and if we were [fol. 161] able to order substantial quantities of one-eighth inch plate, they would make it for us, and we tried through '26 and through '27 to get them to furnish us with a thin plate. Of course, there were several sources of supply in this country for sheet glass, but we used very little of that to start with, and it was the middle of 1927 or the middle of 1928 before we got any thin plate. I know the way it worked was, they started to make thin plate in January or February of that year, and they didn't sell us any of the thin plate until six months later, although we did everything we could to get them to sell it to us. I can tell you definitely whether it was 1927 or 1928, if I can refresh my memory on some notes I have in my pocket.

Q. You may do so if you have any notes in your records.

A. The first thin plate we got from Pittsburgh was in the middle of 1928; I think it was July. They started to

manufacture six months prior to that, but we hadn't gotten any before then.

Q. You spoke of one-eighth inch plate glass and thin plate glass. Are we to understand from those references that that is the character of glass that is suitable for the manufacture of laminated glass?

A. Yes, sir, that is true, with the possible exception of bullet-proof glass, which is a minor article with us.

Q. In our discussion here, we will consider that we are discussing glass suitable for use in automobiles.

A. That is one-eighth inch or thin plate. It is the same thing, to my mind.

Q. Do I understand you to say that throughout the year 1926, after June of that year and throughout the entire year of 1927, you had a number of conferences with the executives of the Pittsburgh Plate Glass Company?

[fol. 162] A. Yes, sir.

Q. At any of those conferences, was there any discussion about patents owned by the Triplex Safety Glass Company of North America?

A. Yes, there were. We discussed it several times, and my contention always was that the Triplex patents, Benedictus and others, covered the industry, and Pittsburgh's executives took the position that they didn't agree with us, that there had been other people making laminated glass in this country, specifically the Saftee Glass Company in Philadelphia, and the Indestructo Glass Company, who had a small plant down on Long Island. And they claimed that Saftee specifically was using the processes covered by Benedictus, and we are now in process of suing them on those patents, and Indestructo used a process that was different in some respects, but neither of those companies ever did any business on a commercial basis in the automobile field. During the war, Saftee made goggle glass and some special lights of that kind; but up to the time that we started to produce glass commercially for the automobile industry, the sales manager, McCusker, of the Saftee Company, told me the only cars they put glass in were their own friend's, and people connected with the company; and he estimated they had not equipped over fifty automobiles altogether; and they never had any what we call standard equipment business. Indestructo was less of a factor, from an automobile standpoint of view, because even the officers of In-

destructo didn't have safety glass in their cars at that time.

Q. What do you know about the factory of Indestructo Company?

A. The original plant that I visited first in 1918 was in back of an old garage on Long Island City, and was two or three times as big as this room, and I suppose they had half a dozen employees, and were not making any automo- [fol. 163] bile glass. A few years ago, they moved the plant down to Farmingdale, Long Island, where they have a bigger plant; but in 1926 and 1927, they were not a factor, as far as any glass was concerned, except goggle glass, and made special jobs and a little bullet-proof glass that they made for banks. Saftee was located in a wooden shed in Philadelphia. It was quite a big plant, but 80 per cent. of the plant was used for making a different product—wrappers for loaves of bread. The Saftee Company is not a corporation; it is owned entirely, and always has been, by Louis J. Kolb, who was in the baking business, and he had this plant up there, and used most of it to make wrappers for loaves of bread, and over to one side he had this process for making laminated glass, which I saw at various times; but as I say, they were not in the business for making laminated glass for automobiles. The first automobile company in this country that ever used safety glass, as standard or optional equipment, was the Chrysler Company, who put it in in 1927 as optional equipment for their cars.

By Mr. Christy:

Q. You mean Saftee glass, not safety?

A. Saftee.

Q. I mean, that was the concern that was using it at that time?

A. No; Chrysler was using Triplex.

Q. Draw a distinction between Saftee Company and safety glass, is what I mean.

By Mr. O'Shea:

Q. Mr. Edwards, in your statement you spoke first of the Saftee Glass Company, and then in reference to Chrysler, you used the term "safety glass". What do you mean by

the use of the term "safety glass", in reference to its use by Chrysler Company?

[fol. 164] A. I mean that the first automobile company in this country that used laminated glass was the Chrysler Company, and they bought it from Triplex in 1927.

Q. You had a conversation with the president of Indestructo Company just prior to your trip to Europe, after you had interested Mr. Haskell in laminated glass, did you not?

A. Yes, sir. Mr. Bartlestone was the head of that company, and he tried to sell me his business.

Q. Did he put any price on it?

A. Yes; he wanted $40,000 for it.

Q. And that was in the year 1926, do you recall?

A. It was in the fall of 1925, because Mr. Haskell and I went to Europe in January of 1926, and investigation of his company proved that at that time he had no patents on laminated glass. He had a patent on a press, but he had no patents on the product, and my investigation of his product led me to believe it was not a commercial article. It looked pretty good when he first made it, but it didn't have what we call permanency of adhesion. If you put it in an automobile and run around the streets for a few weeks, it would shake apart. He did some business with the Government, and had some glass in battleships, and in those ships, after they had been down in the hot countries and came back, the glass was all coming apart. So we told him we were not interested in buying the business.

Q. Do you know whether the Triplex Company has a suit pending against the Saftee Glass Company of Philadelphia?

A. Yes, sir, I do. We have a preliminary hearing on Wednesday of this week.

Q. Do you recall a conversation with Mr. Wherrett and Mr. Higgins, on or about October 5, 1928?

A. Mr. Haskell and I visited them at the offices of the Pittsburgh Plate Glass Company here in Pittsburgh, and [fol. 165] discussed the general situation in regard to selling laminated glass. They took the position—they told us that they were going to sell laminated glass to one automobile manufacturer in each price class, irrespective of what they got for the product, on the theory that if they got one manufacturer in each price class to adopt laminated glass,

the other people would have to follow, and they didn't know what it cost them to make laminated glass and didn't know how to set a price. So they were going to take the business at whatever price they could get, and then hope to make money out of the other people that came to them later. They told us then that they were selling at prices which were very much below the prices we had been quoting. We complained of their having taken business away from us on price. They told us they knew that was so. We also told them that to the best of our knowledge, they were using our process, and that that wasn't fair competition. They denied that they were doing that.

Q. From time to time during 1926 and 1927, did you visit the executives of the Stutz Automobile Company—if that is the correct name of the company?

A. Stutz Motor Company.

Q. With the view in mind of endeavoring to get them to use laminated glass on t[illegible]z car?—Perhaps my date was wrong.

A. In the latter part of 1928, a group of individuals, of which I was one, bought a large percentage of the outstanding stock of the Stutz Company. In company with the rest of the people who were interested in that purchase of practical control interest in the Stutz, I visited the factory in Indianapolis in the fall of 1928, and arranged with Col. Gorrell and Mr. Moskovitz, who were the vice-president and president of the company, to use Triplex glass as the standard equipment in all Stutz cars.

[fol. 166] Q. Did you carry on those negotions for some time?

A. Yes, sir. We agreed at that visit to the principle that was involved, discussed prices, and contract was drawn between the Stutz Company and the Triplex Company, and finally executed, covering their requirements for the year 1929. I don't remember whether it was a contract for the calendar year or a contract for twelve months from the date of the contract. I will bring in the contract, if that is important.

Q. I show you a letter, dated December 8, 1928, and ask you if you received that letter?

A. Yes, sir, I received this letter.

Q. There are a number of pencil notations on there. Do you recognize the writing?

A. Yes, sir, I wrote them. The first one is "Letter December 8, receiving"—this is a notation I made for a telegram we sent to Gorrell—"Letter December 8, receiving careful attention. Will advise you fully, but can assure you no rebates being paid anyone. Accept with pleasure invitation for 19th."

Q. Mr. Edwards, who was Col. Gorrell?

A. He was director and vice-president of the Stutz Motor Car Company of America, Incorporated. He is now president of the company.

Mr. O'Shea: I offer that letter in evidence and ask to have it marked as Plaintiff's Master's Exhibit No. 11.

Q. Mr. Edwards, attached to Plaintiff's Master's Exhibit No. 11 there appears to be a copy of a letter purporting to be signed by T. A. Calhoun. Was that copy transmitted to you with the Master's Exhibit No. 11, do you recall?

A. Yes, sir, I believe it was.

[fol. 167] Mr. O'Shea: It is understood, then, that the attached copy of the letter is part of Master's Exhibit No. 11.

Q. I now show you what purports to be copy of a letter, and ask you if you recollect whether that is your reply to Col. Gorrell, in response to the Master's Exhibit No. 11?

A. Yes, sir; it is dated December 11, 1928.

Q. And you sent the original of that letter to Col Gorrell?

A. Yes, sir; it was answered December 10; but the first sheet of the copy is dated December 11 and the second sheet December 10, which I presume is due to the fact the second sheet was retyped the next day.

Mr. O'Shea: The copy of reply addressed to Col. Gorrell, of the Stutz Automobile Company, is offered as Plaintiff's Master's Exhibit No. 12.

Q. Plaintiff's Master's Exhibits 11 and 12 were received and sent by you in the course of your negotiations, in an endeavor to obtain the laminated glass business of the Stutz Motor Car Company. Is that the fact?

A. Yes, sir. May I interject one thought there? The management of the Stutz Company had agreed with us that we were to have the business. These letters had to do primarily with the details as to price and terms.

Q. What was the final result of your negotiations?

A. We entered into a contract with the Stutz Company.

Q. Was that contract carried out?

A. For a time they lived up to their part of the contract. Later, during the life of the contract, they bought laminated glass from Duplate and Gorrell told me the reason they did it was because Duplate glass was much lower than ours, and [fol. 168] based on our statement that Duplate Company was using our process, and therefore he couldn't be justified in paying a higher price for ours than he could buy Duplate. I saw the product from Duplate.

Q. Now, Mr. Edwards, were you occupied with endeavoring to establish a demand for laminated glass among the automobile manufacturers and body builders?

A. Yes, sir. Everybody connected with the Triplex Company was. That was our principal problem, after we found out how to make the product.

Q. What efforts did you make in that direction during the year 1926? Confine yourself to the year 1926.

A. Does that question apply to my personal efforts or the company's?

Q. Your personal efforts, and also with respect to what you know about the efforts of your associates in the company.

A. You understand that while I am director and vice-president of the Triplex Company, I have never drawn any salary from the corporation, and never been an active employee. I am vice-president of the Chase Securities Corporation, which is an affiliation of the Chase National Bank, and my activities in the Triplex Company have been primarily as a large stockholder. In 1926, I talked to several of the automobile manufacturers, and their reaction was that they would be interested in Triplex, or laminated glass, when and if the public demanded it. It was explained to me to be a similar situation to the four-wheel brake, or any of the other new developments in the industry. The public had to demand a product that was more expensive than what they were using before the automobile producer would put it in as standard equipment. And after numerous such conferences with the automobile manufacturers, we [fol. 169] concentrated our efforts in 1926 largely on retail distribution; established a company in New York City, the Triplex Safety Glass Company of New York, which was or-

ganized by two friends of Mr. Haskell's, and they sold Triplex, retailed to our friends and everybody they could get in contact with, and established a lot of branches all over the surrounding territory for the retail sale of the product. Later, in 1926 and part of 1927, we opened similar offices in most of the major cities of this country, including Philadelphia, St. Louis, Cleveland, Chicago, San Francisco, Los Angeles, and several others. I don't remember exactly.

Q. When you went out to establish this demand, was there any public demand in 1926 for laminated glass on automobiles?

A. No. The public in the United States knew nothing about laminated glass. It had been produced and sold in England since 1914, and there were a few imported cars, such as Rolls-Royce, in this country, that were equipped with it, and there were a few dozen people, like Col. Kolb, in Philadelphia, who really knew something about it, and nobody else knew what it was or knew what it would do. We undertook to educate the public by the sales methods direct, and by some very expensive advertising. We went into display advertising in such magazines as the "Saturday Evening Post" and "Time" and "The New Yorker", six or eight of them, and did a lot of newspaper advertising and employed publicity agents, got a lot of news publicity. We put up Triplex signs in Atlantic City and various other places. We spent in those two years about a quarter of a million dollars on publicity.

Q. That was in 1926 and 1927?

A. That expenditure for publicity may have stretched over a little into 1928; but it was just a short time.

[fol. 170] Q. What was the occasion of discontinuing these expensive advertising mediums?

A. We made a contract with the Ford Motor Car Company, whereby they agreed to use Triplex as standard equipment on the Ford car, and that contract included a provision that wherever and whenever they advertised laminated glass, they would advertise the word "Triplex". That was one of the major considerations that induced us to make the contract with Ford. Ford brought out the model "A" car with Triplex windows, windshields on all of them, and spent $15,000,000 on advertising the car and featured Triplex safety glass, and we discontinued our advertising, on the theory that we were getting so much publicity

that any ordinary amount we could afford to pay for was insignificant and unimportant.

Q. What did you do during the years 1926 and 1927, with respect to the establishment of installation stations, and please define what you mean by "installation stations"?

A. These branches that we opened, or arranged to have opened, all over the country, were equipped to take a car off the street and replace the glass that was in it by Triplex. To start with the Triplex all had to be manufactured to size at the factory, which was a process that had always been followed in England. We found that was a great disadvantage, particularly in such places as Los Angeles, where the delay in getting the glass made to size was a real hindrance to a sale. A person who had an accident and got cut by the glass, they didn't want to wait for several weeks until they got the glass made up in Clifton and shipped out there, and maybe have it damaged in transit and have further delay. So we finally developed a process and built a special piece of apparatus so our distributors would buy stock size pieces of Triplex and cut them and instal them [fol. 171] at his shop, and we now have between 600 and 800 such distributors. It has grown up over such a period of time it is a little hard to draw the line as to where the operation was at any particular date.

Q. Do I understand from that you are unable to state how many of those installation stations you had, say in June, 1930, or even give an estimate of them?

A. I can't testify definitely to that point, of my own knowledge. I would rather have that brought out by somebody's testimony who really knows.

Q. Do you know whether the Triplex Safety Glass Company of North America sold any laminated glass to the Chrysler Automobile Company prior to June 1, 1930?

A. Yes, sir. In 1927, we made an arrangement with the Chrysler Company to put Triplex in their cars as optional equipment, and we sold and delivered to them several hundred pieces of glass during 1927. Mr. Walter Chrysler met Mr. Haskell and myself in New York during 1927, and bought an interest in our company. We offered to put him on the board of directors, but he declined, and later Harold Talbot, who was a director in the Chrysler Company and large stockholder in that company, and also a stockholder in our company, went on our board, and is still a director

in our company. In 1927, Chrysler adopted Triplex as optional equipment on his cars, and a great deal of publicity was given to it by our company and by the Chrysler Company. I have here a reprint of a news article on the subject, which I found in my papers yesterday.

Q. Did you or your company authorize the publication of this reprint that you refer to?

A. Yes, sir.

Q. And are the facts stated in there correct, to your knowledge?

A. Yes, sir.

[fol. 172] Mr. O'Shea: We offer the reprint copy in evidence as Master's Exhibit No. 13.

Q. Do you recall, Mr. Edwards, the date that this reprint, Master's Exhibit No. 13, was issued?

A. I can't give you the exact date. I believe, the best of my recollection is, it was during 1927, and the reason for that is that we state in here, "Manufacture of this glass in this country by an American company started last year."

Q. So that it was from that that you believe it was some time during the year 1927?

A. Yes.

Q. Do you remember when Chrysler adopted Triplex glass as optional equipment?

A. To the best of my recollection, it was in the late summer of 1927.

Q. And that this reprint, Master's Exhibit 13, was issued shortly after that adoption?

A. That is my recollection, yes.

Q. Do you recall any conversation with Mr. Chrysler, with respect to prices of laminated glass?

A. Yes, sir.

Q. What was the substance of that conversation, and give the date as nearly as you can.

Mr. Christy: The question is objected to, in so far as it may be calling for, or may be replied to, by assertions of a hearsay character.

The Master: We will reserve our decision until a later date, and overrule the objection for the time being. Exception noted to the defendant.

A. Some time during 1927, I talked to Mr. Walter Chrysler about the prices on Triplex, and told him that under this arrangement we had made for Chrysler to use Triplex, the price was to be $4.80 on plate, and $3.60 on sheet, and I explained to Mr. Chrysler that we based our price on the [fol. 173] English company's prices and on our estimates of cost, as there was no price for laminated glass in this country, and our experience on quantity production was so limited we had no practical experience in what our costs were going to be.

Q. Was there any discussion in that conversation with respect to any of your competitors' prices; and if so, state what it was, either then or later?

Mr. Christy: Same objection.

The Master: Same ruling. Exception noted to the defendant.

A. At that time, I do not recollect there having been any discussion about competitors' prices because there was nobody competing.

Q. Did you have any conversations with Mr. Chrysler later, say in 1928, with respect to prices?

A. Yes.

Q. If so, give the date and state what the substance of the conversation was.

Mr. Christy: I object to that, Mr. Master, for the same reason.

The Master: Objection overruled. Exception noted to the defendant.

A. After Chrysler stopped using Triplex and purchased laminated glass from Duplate, I went to see Mr. Chrysler in New York, and tried to induce him to use Triplex, and he said to me, "You admit yourself Duplate is made on the Triplex process, and we can buy it much cheaper than we can buy Triplex; therefore, it is my duty to the Chrysler Company, irrespective of my personal stock interests in the Triplex Company, to buy from Duplate, and I am going to do it as long as their price is cheaper than yours."

[fol. 174] Cross-examination.

By Mr. Christy:

Q. What was the date of that last conversation you just mentioned?

A. It was after Chrysler had been using Triplex and adopted Duplate; but how to fix the exact date is a little difficult, Mr. Christy.

Q. Can you give me the year?

A. I think it was in '28, and I think it was in the summer time, because I remember going to his office, and the windows were all open.

Q. That is as near as you can fix it now, offhand?

A. I can refresh my memory by reference to the records, if that is important.

Mr. Christy: I would like to have the date of this conversation, but I assume it will be fixed more definitely through somebody else.

A. (Continued.) My recollection is, I wrote a memorandum on my talk with Chrysler and sent it over to the factory right after that talk. If I can find that memorandum I can give you the exact date.

Q. Let me have the date and refresh your recollection from your memorandum.

A. To the best of my recollection, I think it was October of 1928.

Q. Referring to this Exhibit No. 13, the advertisement of the Chrysler Company, what did this optional arrangement amount to? Did it agree to the Chrysler Company's using a large amount of laminated glass?

A. They agreed to furnish a car equipped with Triplex to anybody who wanted to buy a car in that condition, at an extra price, and we furnished the Chrysler Company with several hundred pieces of glass for that purpose, and also furnished glass to the people who were building bodies for Chrysler.

[fol. 175] Q. That is what I mean. The result was that you furnished several hundred pieces?

A. Yes, sir.

Q. But you did not, under this arrangement, attain what, to use your expression, is quantity production?

A. No, sir.

Q. You referred to a contract which you made with Stutz. Have you that contract here or a copy of it?

A. Yes. (Contract handed to counsel for defendant.)

Q. What does this expression "utility quality" mean in this contract?

A. Sheet glass as compared to plate glass.

Q. By "sheet glass" you mean what is usually called window glass?

A. Yes.

Q. And how does the sheet glass of the size used in this laminated glass compare in price with the quality of plate glass which you used for your laminated glass?

A. The price comparison?

Q. Yes.

A. As of what date?

Q. Well, the date of this contract, December, 1928.

A. The sheet glass costs somewhere between 20 and 30 per cent, as much as plate. That is a hard question to answer, because the price on both of them was fluctuating all the time.

Q. Put it this way; to use an extreme example: If the quality of plate glass which you used cost $1.00 per square foot, sheet glass for the same purpose would cost about from thirty to thirty-five cents?

A. That is correct. And maybe this would classify it: When we started and bought our glass abroad, our plate cost about seventy-five cents, and we could buy sheet glass [fol. 176] in this country for about seven and one-half cents. Today plate costs between twenty and thirty cents, and sheet still costs about seven and one-half cents. It all depends on quality and size and quantity.

Q. What quality of glass did you use in laminated glass which you sold to the Chrysler Company?

A. That was standard quality plate.

Q. You didn't use any sheet glass at all in that?

A. I don't think we ever sold Chrysler—at this time you are talking about, we ever sold Chrysler any Triplex made of sheet glass, but I am not sure about that.

Q. Well, coming back to the Stutz. Referring to this contract which you have produced of December, 1928, what did you sell Stutz—both standard and utility?

A. Yes, sir. You mean, what we shipped Stutz?

Q. Yes.

A. Both standard and utility. To start with, the larger percentage of it was utility, made from sheet glass, and later the larger percentage of it was plate.

Q. And that was furnished on specifications from Stutz, I suppose, as they might order?

A. Yes, sir.

Q. Did you ever furnish Stutz under this contract any laminated glass made up of one sheet of plate glass and the other of what you call sheet glass?

A. I think we furnished Stutz some small quantities made that way, but they were only samples, as I remember.

Q. Didn't Stutz complain to you—not to you personally, but that your company was filling its orders for your standard quality with laminated glass made of one sheet of plate glass and one sheet of sheet glass?

A. The only recollection I have of such a thing ever happening was in connection with a different automobile com- [fol. 177] pany and a different manufacturer of laminated glass. I don't remember of that having happened in the Stutz case with us. I don't think we ever misrepresented our product.

Q. You have referred to your contract with the Ford Company. I understood you to testify in the hearing in the District Court, that that was of the nature of a manufacturer's license?

A. There was such a provision in the contract.

Q. Can you produce that contract?

A. I think I can answer any questions on that contract that you care to ask.

Q. You haven't a copy of it here?

A. No.

Mr. Christy: I call on my opponent to produce a copy of this contract.

Q. The laminated glass which Ford used in accordance with this license contract, which will be produced, was mainly what you have called the utility quality, wasn't it?

A. To start with, Ford used Triplex made of sheet glass in the windshields of the Ford cars, exclusively. He has since changed to the use of plate glass for that purpose. He has always used Triplex made of plate glass in the Lincoln car and in certain models of the Ford, as specifically the Ford town car.

Q. Can you tell me offhand approximately the date of your contract with Ford?

A. October, 1927.

Q. Do you consider that a contract with so large a prospective user of laminated glass as Ford, under which it was contemplated that laminated glass made of sheet glass would be very largely used, made just at the time when you

were exploiting your more expensive product, would reflect very favorably upon the prices which you would be able to obtain for your higher quality of plate glass products?

[fol. 178] A. I don't understand that question. You are asking what I consider now or what I considered at the time we did it?

Q. Well, both.

A. Our contract with Ford was a cost plus contract. It doesn't specify that he is to use sheet glass. He told us that he wanted to use sheet glass to start with, to see how it would work, and also he couldn't buy enough plate glass, or couldn't produce himself, to take care of his requirements at that time. He told us he was going to make thin plate, that other people were in the process of producing commercial quantities of thin plate, and that he might at any time change from sheet to plate. We turned the process and all of our knowledge over to Ford, in return for a contract for half of his requirements on a cost-plus basis for four years, and in return for a contract that forever any Triplex or laminated glass that the Ford Company used would be advertised as Triplex, that forever any improvements in the process that were developed in his plant, would belong to us, and if they were patentable, the patents would belong to us, he to retain shop rights, but he pledged himself to use Triplex forever, and he only pledged to buy half of his requirements from us for four years. But our consideration of the Ford contract was that it put laminated glass over, and that it so proved. Whether that is an intelligent answer to your question or not, Mr. Christy, I am trying to give you the facts.

Q. Well, Ford started out to use on a large scale laminated glass of a quality which you agreed to furnish in this Stutz contract at $1.45 a square foot. Would you expect to be able to maintain with other automobile manufacturers prices for laminated glass made of plate glass, running $3.00 and $4.00 a square foot?

[fol. 179] A. Certainly.

Q. To what automobile companies were you selling laminated glass down to, say, February, 1928, in commercial quantities?

A. Ford, Lincoln, Chrysler, Pierce Arrow, I think. You are going to have our sales representative and the active president of the company on to testify, and if it doesn't

defeat your purpose, I would rather not answer that, because I don't think I know. I could look it up from the record.

AMORY L. HASKELL, a witness produced on behalf of the plaintiff, having been duly sworn, testified as follows:

Direct examination.

By Mr. O'Shea:

Q. What is your position with the Triplex Safety Glass Company?

A. President.

Q. Have you been president since its inception?

A. I have.

Q. I show you a contract and ask you if that is your signature at the end of that contract?

A. That is.

Q. Is that the contract which you entered into with the Stutz Automobile Company as or about the date stated on the contract, December 20, 1928?

A. That is correct.

Mr. O'Shea: I offer the contract identified by the witness as Plaintiff's Master's Exhibit No. 14.

Q. Were the terms of that contract carried out by you?

A. They were carried out by our company, yes.

[fol. 180] Q. Were they fulfilled by the Stutz Automobile Company?

A. The Stutz Company agreed to purchase their year's requirements from us; but after, I should say, five or six months of the contract, we discovered that they were buying glass on the outside.

Q. Did you find out from whom they were buying that glass?

A. From Duplate. Some of the glass was bought from Duplate by one of their custom body builders, and supplied to Stutz with their cognizance.

Q. What was the situation in this country with respect to a supply of glass suitable for use in manufacturing laminated glass when you organized your company?

A. There was no source for one-eighth inch glass over here, and we had to purchase glass from Europe, in order

to get sufficiently thin glass, so that when you laminated two pieces together, plus the celluloid, the finished product would be thin enough to go into the standard channels used in motor cars in this country.

Q. And did you make any efforts to find any source in this country of plate glass suitable to be used in the manufacture of laminated glass?

A. Mr. Edwards had known Capt. Brown before I became interested in Triplex, due to his previous association in the glass industry, and he took me out to Pittsburgh, and together we visited Capt. Brown, and Capt. Brown called in Mr. Higgins, who at that time was sales manager, I believe, or chairman of the commercial department, I believe was the title.

Q. Of what company?

A. Of the Pittsburgh Plate Glass Company. And we went to see them with the idea in mind of getting them to produce one-eighth inch, or scant one-eighth inch, plate glass for us. Capt. Brown said their plants were all very [fol. 181] busy at that time, and that he didn't think the laminated glass business would amount to anything for at least ten years, that they had in the back of their minds to produce some one-eighth inch plate glass for use in windows, on the theory that by producing one-eighth inch plate glass at a cheaper price than the quarter-inch plate glass, they could supplant some of the window glass that was being used; also that this thin plate glass could be used in the same frames as the sheet glass that was then being used, and there wouldn't have to be so much changing of the counterweights, in order to make the windows operate. At that time he said it might be a year or it might be longer; that it would depend on the demand for the thicker plate glass which was occupying their capacity at that time.

Q. When were you first able to purchase plate glass suitable for use in laminated glass from any American source?

A. As a result of later conferences with the Pittsburgh officials we got a small sample shipment of some plate glass that they had made on the first run of thin plate; but they were not in a position to supply it commercially until some time in 1928.

Q. That is the nearest you can fix it from your recollection?

A. The nearest I can fix it.

Q. What was the first intimation you had of a competitor entering into the laminated glass business in America?

A. Of course, I knew Indestructo and Saftee were already in the business, and I knew that when I went over to England with Mr. Edwards to sign up the American rights. You mean, further competitors?

Q. Any other competitors than those two.

A. The first indication I got was from Mr. F. P. Davis, who was president of the du Pont Viscoloid Company at [fol. 182] that time, and from whom we were buying most of our celluloid, and they told me they had been approached by the Pittsburgh Plate Glass Company with the request that they join with the Pittsburgh Plate Glass Company in forming a laminated glass manufacturing company.

Q. Do you remember when that intimation came to you—what year or time of the year?

A. It was the latter part of December, 1927.

Q. Now, with respect to the Saftee Glass Company and the Indestructo Company, what did you learn as to their position in the laminated glass business in America at or about the time that you went into this business?

A. Mr. Edwards and I met Mr. Bartlestone. He had heard that we were interested in the American rights for Triplex, and he got in touch with us to see if we wouldn't buy out his business. He offered to sell it for $40,000 or $45,000—I can't remember which—it was in the low forties at any rate—providing we would give him a year's employment, and at that time we looked into the situation very carefully. We went down and looked over his plant, and I consulted with some of my friends in the du Pont organization, to find out just what they thought of his products, in view of the fact that they had been selling him celluloid, and the general consensus of their opinion was, his product was not commercially satisfactory. Our patent attorneys advised us there was nothing he had that would strengthen our patent situation, or nothing we had that would infringe anything he had. So we decided not to buy out his company. I knew of the Saftee Glass Company through Mr. Edwards. He had been over to see their plant. I didn't go down. That was before we actively became interested together in Triplex, and a short while after we were operating I met Mr. McCusker and suggested that if he was over [fol. 183] in New York any time, that he drop over and see

us, and we thought there might be some benefit derived from having a frank discussion of the laminated glass industry, and he came over in 1927 and visited our plant, and at that time I showed him through the plant, and he said we appeared to be very busy, and I asked him what they were doing.

Mr. Christy: I object. That is all outside.

Mr. O'Shea: I think this is all pertinent on the condition of this industry at the time he went into it.

The Master: We will hear it, and I will determine later whether or not it is admissible. Exception noted to the defendant.

A. (Continued.) I asked Mr. McCusker what their sales had been in automobile use, and he said——

Mr. Christy: I object again. That is pure hearsay.

Mr. O'Shea: This is under the same theory as the other cases. It seems to me it is pertinent.

The Master: Answer the question.

A. (Continued.) He said that he did not believe they had equipped more than 150 cars in the United States; most of their business had been bullet-proof glass and glass for gas masks and goggles during the war.

Q. Do you know what your capacity was during that time, or, let us say, in July, 1927?

A. Our capacity was approximately 500 lights a day.

Q. And how much would that be, translated into square feet?

A. About three square feet to a light, on an average.

[fol. 184] Q. So your capacity at that time was in the neighborhood of——

A. 1500 square feet a day.

Q. Do you recall a conference in May, 1928, with any of the executives of the Pittsburgh Plate Glass Company?

A. Not in May, 1928.

Q. You recall no such conference?

A. No.

Q. Were you present at a conference between yourself and Mr. Edwards, at which there was present also Mr. Wherrett and Mr. Higgins, in or about October, 1928?

A. I do.

Q. Where was that conference held?

A. It was held in Mr. Wherrett's office in Pittsburgh.

Q. Will you give the substance of that conference and what was the occasion of it—subject discussed?

A. We had found through our Detroit representative and through our own sales manager that the Cadillac business had gone to Duplate at a better price than we had quoted, and that was followed a little later by Chrysler——

Mr. Christy: I object to that as not responsive.

Q. Give me the conversation between you and Mr. Edwards and Mr. Wherrett and Mr. Higgins.

A. Mr. Edwards and I saw Mr. Higgins and Mr. Wherrett with the idea of finding out what their future policies would be.

Q. Just state the substance of the conversation.

A. The substance of the conversation was, "You fellows have come into this laminated glass business and you have taken business from our previous customers, apparently at any price. We would like to know just what your future [fol. 185] policy is, as to the merchandising of laminated glass"; and they made the statement—Mr. Higgins, I believe, was the actual spokesman—that it was to be their policy to get one car in each price class. That is, something in the lower price class, like Chevrolet, and something in the middle price class, like Buick, Nash, and Chrysler, and something in the higher price class, like Pierce-Arrow, Cadillac, Lincoln—one of those—to adopt safety glass all around. They had offered to sell at various prices, Mr. Higgins said, and they expected to keep after the situation until they struck a price at which they thought these men would be interested, and they felt that when they once got a car completely equipped with laminated glass in each of those price classes, that the rest in that price class would have to follow. In which case they could get a decent price from those other manufacturers, once they had been forced into the use of laminated glass through one of their price class adopting it.

Q. During the years 1926 and 1927, where was the Triplex Safety Glass Company of North America factory located?

A. In Hoboken, New Jersey.

Q. What was the capacity of that factory at that time?

A. 500 lights a day, approximately.

Q. Did you subsequently move the factory from Hoboken, New Jersey?

A. When we signed the contract with Ford, we realized it would be impossible to turn out the quantity required by Ford in our then existing factory; so we secured another factory in Clifton, New Jersey, which we started in the spring of 1928.

Q. Have you in mind what the floor capacity of that factory is?

[fol. 186] A. The factory at Clifton?

Q. Yes, the factory at Clifton.

A. The factory at Clifton has a floor capacity of 305,000 square feet, I believe, something just over 300,000 square feet. I know that our Hoboken factory had 21,000 square feet in our original factory, and when our business increased we had to lease another floor in this factory building which added 21,000 more square feet to our space.

Q. At what prices did you sell your product during the years 1926 and 1927?

A. We had a list price of $8 a square foot for plate or standard quality Triplex, and $6 a square foot for sheet or utility Triplex. That was the list price to the consumer, from which our distributors got a 40 per cent. discount.

Q. So you sold to distributors at $8 per plate and $6 per sheet with a 40 per cent. discount?

A. That is correct.

Q. And those prices continued for how long?

A. Those prices continued until Duplate was announced and they set a lower list price.

Q. Were those prices based on quantities, or were the sales in those years at those prices, irrespective of quantities?

A. Those were irrespective of quantities to distributors.

Q. And consumers?

A. The consumers would purchase at the list price if they were retail. That was the maximum discount that we gave to anybody.

Q. Had you received any standard equipment orders during the years of 1926 and 1927?

A. We didn't receive any during 1926, because our factory was only started operating. We turned out our first piece of glass in July '26, and it took us until October to [fol. 187] get the prices fully adjusted, and in the balance of that year we really started deliveries in October, 1926. In 1927, we received an order for standard equipment on a

special phaeton body that the Chrysler Company were bringing out. Each one of those were to have two windshields—the tonneau windshield and the front windshield —and I got that business through Mr. Keller, of the Chrysler Motor Car Company, whom I had known previously in General Motors.

Q. Do you recall at what price that order was sold?

A. I do not recall the exact price. We have those figures.

Q. Do you know Mr. George Hunt?

A. I do.

Q. Is he connected with your company?

A. He is our Detroit representative, handles the sales of Triplex in the general Detroit area.

Q. How long has he been connected with you?

A. He has been connected with us since the inception of our sales efforts.

Q. Do you recall about when that was?

A. The contract between us, as I recall it, was signed in August of 1926.

Q. So that he has been with you since the beginning of your company, practically?

A. He has.

Q. Will you please state what efforts you personally made to induce the Ford Motor Company to adopt your Triplex glass?

A. Naturally, when we started our sales efforts, I was traveling all over the United States, working with the establishment of distributors, and also making calls on the various motor car concerns; quite frequently with Mr. Hunt in the Detroit area, and sometimes with our sales manager [fol. 188] in other points. We attended, naturally, all the important motor car exhibits——

Mr. Christy: That is not called for by the question. I object as not responsive to the question.

Mr. O'Shea: He is stating his efforts.

The Master: We will hear what the witness has to say, and I will determine later whether it is admissible.

A. (Continued.) As a result of attending one of these exhibits, we met a Mr. Henderson, who at that time was sales manager of Lincoln, and he suggested that we drop in to see a Mr. Hughes, who at that time was an engineer

at Lincoln, with respect to using Triplex glass in the Lincoln car. That was the Chicago Automobile Show in 1927, which took place the last week of January and the first week of February. It generally runs into those two weeks. We saw Mr. Hughes and laid before him the story of Triplex. He said he had been over in England and knew Triplex, wanted samples to test, and we gave them, and he said that he would like to have a complete story on Triplex; that he could give Mr. Edsel Ford. So I went back and worked up a booklet of some eighty or ninety pages, with photographs of our factory, photographs of cars that had been in collisions, and a general excerpt of comments, both in the United States and abroad, on Triplex and what it had done. That was sent to Mr. Edsel Ford, and from that point on, where we were really driving at Lincoln, because Lincoln was one of the highest price cars in the United States, and theoretically a logical candidate for Triplex glass, due to its cost, the idea crept into the Ford organization, and when they brought out their new car they knew all about [fol. 189] Triplex from these previous efforts we had made, and also from such efforts Mr. Hunt had been making in Detroit with the people he knew in the Ford organization.

Q. Did those efforts result in this Ford contract?

A. Those efforts resulted in the Ford contract.

Q. Did the Ford Motor Company adopt Triplex on the Lincoln car?

A. The Ford Motor Company adopted Triplex on the Lincoln car, and also in the windshield of the new model "A" Ford car.

Q. Does the Lincoln car still use the Triplex glass?

A. The Lincoln car still uses Triplex throughout.

Q. Do you recall at what prices you sold the Ford Motor Company its glass for use on the Lincoln car, first, after it was adopted?

A. I would prefer to have those figures brought out exactly. I remember the window-light price was $3.26 a foot, and the windshield price was slightly higher than that, I think about $3.50 a foot.

Q. You don't recall exactly.

A. No, I don't recall exactly.

Q. Assuming that those were the prices, do you recall how long they prevailed?

A. They prevailed until the latter part of 1929.

Q. And were then reduced?

A. They were then reduced.

Q. And what was the reason for reducing the prices at that time? I am speaking now of the Lincoln glass.

A. The Ford purchasing department notified us that quotations were being made outside at lower prices, and that they thought that, although we were using silvering quality glass in Lincoln, and their inspection was very stiff, that we ought to be able to make a reduction to bring [fol. 190] our prices more nearly in line with prices quoted on the outside.

Q. Do you recall what that reduction was, or will we have to get that from the sales department too?

A. I think you had better get that from the sales department. I can't remember all these figures exactly, and I think it would be better to bring out the exact figures.

Q. Now, did you have any conversations with Mr. William Fisher, of the Fisher Body Corporation?

A. I have had a great many conversations with him.

Q. Can you state when those conversations started, and for what period of time they progressed?

A. Well, they started shortly after I became interested in Triplex. I knew the Fisher Brothers when I was in General Motors.

Q. You mean, after the inception of your company—the Triplex Safety Glass Company?

A. Yes, sir.

Q. Did you have any conversations with Mr. Fisher with respect to prices?

A. I had a lot of conversations with him at the time he was considering laminated glass for the Cadillac and La-Salle cars.

Q. At that time did you quote him your prices for standard equipment on his business?

A. At that time we did, yes.

Q. And later on at any of those conversations was there any discussion as to the prices, say in 1928, after you began to meet with competition in this business?

A. In 1928 Mr. Fisher referred a number of times to the fact that the Pittsburgh Plate Glass Company had joined with the du Pont Company and formed a laminating concern, and said that they were quoting him very attractive prices.

[fol. 191] Q. Did he state what those prices were?

A. He did not.

Q. Do you know whether, prior to 1928, you had sold any laminated glass to the Fisher Body Corporation?

A. We had sold quite a lot of them for optional equipment on various cars. Quite a few Cadillacs had been bought with Fisher equipment, which the Fisher Body Company, through Mr. William Fisher, had agreed to install at their body plant. At least a portion of that time they were making those bodies at Chrysler, and Chrysler having adopted Triplex as optional equipment, and having notified all their dealers, requested Fisher Body Company to carry a stock of glass at their plant which could be put in the Fisher bodies to be supplied by sales by Chrysler. These sales were actually effected by the Fisher Body Corporation.

Q. Do you know a corporation known as the Fleetwood Corporation?

A. I do; at least, I did not know whether that was the exact corporate name.

Q. It is the name it is known as in the trade?

A. Yes, it is the name it is known as in the trade.

Q. Is there any connection between the Fleetwood Corporation and the Fisher Body Corporation, that you know of?

A. The Fleetwood Corporation was bought out by the Fisher Body Corporation, and now is either a subsidiary or a division of the Fisher Body Company.

Q. Please state generally with what other companies you attempted to sell your glass during the year 1927—what other contacts you had made?

A. Oh, we contacted with Marmon and Stutz, Pierce-Arrow—all the manufacturers around Detroit—Hupmobile, Hudson, Buick at Flint, Chevrolet, Reo at Lansing, Olds-[fol. 192] mobile at Lansing, Franklin at Syracuse, and of course the Chrysler.

Q. Make any contact with the Studebaker Corporation?

A. Studebaker also; Dusenberg—practically every motor car concern. I don't know any we missed. If we did, it was without our knowledge.

Q. I think you made a license with the Johnston Glass Company, of Hartford City, Indiana. For what period was that license granted, if you know?

A. For twenty years.

(Recess until 2 o'clock P. M.)

Afternoon Session

AMORY L. HASKELL, resumes the stand.

Direct examination (continued).

By Mr. O'Shea:

Q. I show you a letter and ask you if you received that letter?

A. I did.

Mr. O'Shea: I offer the letter in evidence as Plaintiff's Master's Exhibit 15, letter being dated May 20, 1929.

Mr. Christy: Object to the offer; purely hearsay and not evidence. Any authority that has to do with state of mind of the trade, or anything of that kind, has nothing to do with specific statements of that character.

The Master: We will receive it in evidence, and decide later whether it is admissible.

[fol. 193] Cross-examination.

By Mr. Christy:

Q. Did you give the date of your license to the Johnston Company? If not, will you do it, approximately?

A. We will produce it.

Q. Can you tell me approximately now?

A. Approximately in the end of the first quarter of 1929, as I remember.

Q. I believe you said at the trial of this case in the fall of '29, that it was during the same year, 1929?

A. I know it was shortly after the Chicago Automobile Show.

Q. And you say that license was to run for twenty years?

A. I do.

Q. You don't mean twenty years under this patent in suit?

A. That was part of the license agreement.

Q. There were a lot of other things in it.

A. As I understand it, the contract is going to be produced.

Q. I am asking you now what were the other considerations besides the right to manufacture under this patent?

A. They agreed to sell at no higher prices than we might stipulate—the glass manufactured under this license. They agreed to turn over to us any developments they might make in the process through their use of it, and we would have the right to patent anything that would be patentable. They were to send a man of theirs down to our factory where we were going to try out some modifications they had on automobile production. They were manufacturing a small quantity of glass at that time in their own factory, and we had a lot of business going through, and we could [fol. 194] use it on that volume that was going through our factory.

Q. So that even down to the end of the license period, twenty years from 1929, and sixteen years after the expiration of this patent, they were to adhere to your prices, were they?

A. For any glass manufactured under our patents.

Q. There were some other patents you had?

A. We had the various patents we had gotten from the British Company.

Q. How many of them?

A. I don't recall the exact number. They are all cited in the agreement.

Q. But this patent was not the only one by any means?

A. There were other patents.

Q. And I believe you stated at the trial that the product to the Johnston Company under its license was limited to 10 per cent. of your production.

A. I believe they were limited to a million square feet a year, not to exceed 10 per cent. of our production.

Q. What was your production at the time the license was made?

A. I think it was around six or seven million feet.

Q. Both plate glass and sheet glass?

A. Yes, sir.

Q. And about what proportions?

A. Well, I should think that the proportion of sheet glass at that time probably ran as high as 70 or 75 per cent. in actual foot area.

Q. And was all that sheet production for the Ford Company?

A. Not all of it, no.

Q. The greater part of it?

A. The greater part of it, yes.

[fol. 195] Q. Was any of this sheet production sold for supplying any automobile manufacturers except the Ford Company?

A. We sold some to the Yellow Truck and Coach, for use in their taxicabs.

Q. But not for any private cars, except to the Ford Company?

A. We sold some through our distributors for putting in private cars.

Q. I mean, not for automobile manufacturers?

A. No, not for automobile manufacturers.

Q. You say you went into your new factory at Clifton in the spring of 1928. Is that right?

A. That is right.

Q. And before that time your company wasn't in position to make any contract with any automobile company to supply them with laminated glass, as standard equipment, were they?

A. As far as factory capacity goes, you mean?

Q. Yes.

A. Not without increasing our space.

Q. And not without moving into a new factory from the one you were then occupying, could you?

A. Our original factory was located in what they call the Hoboken terminal area. It was a manufacturing building that could supply steam and power and any operations you might need for working in a factory, and I think the building had something like ten or twelve stories in it, and there were a number of floors for lease which we could have had if we had to expand. We did expand once and took another floor. We started on one floor and took another as our production grew.

Q. Such an expansion would not have been commercially reasonable if you were satisfying the demands of a large automobile company for standard equipment?

[fol. 196] A. If we had received such a contract, we undoubtedly would have preferred to have a factory that was possibly subject to a more convenient layout; in other words, we were limited to 21,000 square feet on a floor, and it would have been more convenient to have had a larger space on one floor.

Q. Now, with respect to this group or ring of purchasers, as I recall it, namely, the Fisher Body Company, the Fleetwood Body Company, and the manufacturers of the Cadillac and La Salle cars, did you ever, before the spring of 1928, quote them a price for any substantial order of laminated glass?

A. Before the spring of 1928?

Q. Before the spring of 1928, when you moved to Clifton?

A. We had quoted them prices ever since we started calling on them with a view to getting them to put it on their standard equipment.

Q. Did you quote them a price for standard equipment?

A. We did.

Q. What was it?

A. I don't recall exactly what the quotation was, but those figures can be produced.

Q. Will you see that they are produced?

A. I will.

Q. Now, as to these other companies which you have named, namely, the Stutz, the Chrysler, and so on, I will ask you the same question: Before you moved to your Clifton factory, did you quote any of these companies a price for laminated glass to be furnished in commercial quantities, or, as you put it, of standard equipment? And if so, when and what was the price?

A. We quoted all those factories, and that entire schedule, as I understand it, is going to be brought out by our treasurer. I have a general idea as to the price, but obviously four or five years ago it is difficult to recall in your [fol. 197] mind just the various steps as to dates. That will all be supported by our files.

Q. Mr. Haskell, do you control the selling policy of your company?

A. As president, obviously.

Q. Do you mean directly or as a consultant?

A. As president of the company, naturally I am interested in all policies of the company.

Q. And you could veto it if you wanted to?

A. I could.

Q. Say prior to 1929, did you make any price distinction for your products as between different customers?

A. Not that I recall. The only distinction we ever made was on the question of the different brands of glass; that is, the distinction between plate and sheet Triplex and the differentiation between classes of buyers, such as the automobile manufacturers, our distributors, retail purchasers, boat builders, airplane builders, custom body builders, but in any one classification we sold everybody at the same price.

Q. Take what we call distributors. Do you mean by that concerns to whom you sold at wholesale, who would retail their product directly to users?

A. Some would retail directly and some would be sold through their sub-dealers.

Q. Did you make any distinction between these distributors and automobile manufacturers, or people who built bodies for automobile manufacturers?

A. We had a special price for automobile manufacturers.

Q. That was lower than to your distributors?

A. That was lower than to the distributors.

Q. Did you make any distinction of price based on quantity of production?

A. We did eventually.

Q. That was after the first of 1929?

[fol. 198] A. No, I believe that we made quotations based on quantity before 1929.

Q. Can you think of any example?

A. We have all those figures just as they are taken from our files, and they will be introduced later.

Q. Well, can you think of one now as an example of such difference in price based on quantity?

A. I know that we differentiated between the amounts, so much per day at one price and a larger volume at another price.

Q. That was between different customers of the same class—for example, two automobile manufacturers?

A. Any automobile manufacturer had the privilege to buy at those prices, based on their respective quantities.

Q. You have spoken as having had to consider Duplate as a competitor. What other competitors did you have after, say, the first of 1928, if any?

A. After the first of 1928? Of course, there was Indestructo and Saftee had already been in existence, and there was the Johnston Glass Company; Libbey-Owens later came into existence, but that was some time after.

Q. About when did Libbey-Owens come into the market?

A. As I recall, somewhere in the middle of the summer of 1929.

Q. Did you consider that the Libbey-Owens product was covered by this patent in suit?

A. Not by this patent in suit.

Q. You had to meet the prices of that competitor as well as Duplate, as you say, did you not?

A. Eventually we met the established price.

Q. But as compared with Saftee and Indestructo, Libbey-Owens was a substantial competitor, was it not?

[fol. 199] A. It was.

Q. Were there any others of that grade besides Duplate and Libbey-Owens?

A. American Window Glass came in the picture about the same time Libbey-Owens did, as I remember, but they have never been very much of a factor.

Q. And they only competed for the cheaper sheet glass product, did they not?

A. I believe they make plate too.

Q. That may be, very recently.

A. Most of their sales have been in the sheet. When I say I believe they make plate, I mean they make plate laminated. I understand they buy their glass from the Pittsburgh Plate Glass Company.

Q. How much product has the Johnston Glass Company reported to you under its license?

A. I haven't got those figures, but they can be produced.

Q. Almost infinitesimally small?

A. Well, small as compared with our volume. They have been making, I imagine, in the neighborhood of one or two hundred pieces a day, on the average.

Q. This Stutz contract has a provision which reads as follows: "The seller shall not, without first obtaining the

written consent of the buyer, in any manner advertise, or publish the fact that the seller has contracted to furnish the buyer the articles herein mentioned, and for failure to observe this provision, buyer may have the right to cancel this agreement, without any further liability thereon." Do you know why that provision was inserted?

A. The only thing I know about that whole contract is that Mr. Gorrell told me that that was the standard form of contract they used with everybody. I believe it was originally drafted by the General Motors Corporation for use of their supplies.

[fol. 200] Q. Then there was no particular reason for its being in this deal?

A. Not that I know of, because they were very anxious to have us give all the publicity to it we could. They asked us to send sample shields to all their sales rooms, with the Triplex decalcomanias on them, and give all the publicity in our advertising or publicity work that we could.

Mr. Christy: Since the witness has testified respecting prices and dealings with the Ford Company, I think I have the right to question him regarding these with the Ford contract before me. This contract is not here today. I understand that other witnesses will be called, of whom I can ask the same questions, and I do not wish to detain this witness unnecessarily. I do, however, claim the right to have him recalled. If that is the understanding, I have no further questions to ask of him at this time.

Mr. O'Shea: Counsel for plaintiff states that Mr. Haskell will hold himself in readiness, subject to recall at any time Mr. Christy so desires. Mr. Haskell will require at least one day's notice, and possibly longer, in view of the fact that his headquarters is in New York. Subject to his getting here at a reasonably convenient time, he will be available at such a time as Mr. Christy desires.

Redirect examination.

By Mr. O'Shea:

Q. In your cross-examination, Mr. Haskell, you stated that one of the terms of the Johnston contract was that they would not sell at prices higher than you. Are you clear in your mind?

A. I meant to say lower.

[fol. 201] Q. In your cross-examination, you spoke of the American Window Glass Company as entering into the competitive picture some time in 1929. Do you know whether your company has a suit pending against that company, the American Window Glass Company?

A. We have.

Q. Is this same Benedictus patent in suit?

A. Under the same patent.

Q. Mr. Haskell, did you have any negotiations or conversations with the executives of the Pittsburgh Plate Glass Company, with respect to the price they were charging you for plate glass?

A. I had a number of talks with Mr. Higgins in the past, and more recently with Mr. Judson. Mr. Higgins always made the statement to me in the past, we were getting the glass at the same price that they were selling glass to their own laminated plant.

GEORGE H. HUNT, a witness produced on behalf of the plaintiff, having been duly sworn, testified as follows:

Direct examination.

By Mr. O'Shea:

Q. Where do you reside, Mr. Hunt?

A. Birmingham, Michigan.

Q. Where do you conduct your business?

A. In Detroit.

Q. Are you connected in any way with the Triplex Safety Glass Company of North America?

A. Yes, sir.

Q. In what capacity?

A. Detroit representative.

Q. And how long have you been working for the Triplex Safety Glass Company of North America, in that capacity?

[fol. 202] A. Since August, 1926.

Q. Will you just give us a short description of what your duties are, as the Detroit representative?

A. I am to call regularly and actively and continuously among all the automobile manufacturers, body builders, aircraft manufacturers, trying to sell them Triplex safety glass; trying to sell these manufacturers Triplex safety glass—that is, in the Detroit district primarily.

Q. Will you please state what automobile manufacturers and body builders are included within your territory?

A. Ford, General Motors Corporation, Fisher Body, Murray Body, Briggs Manufacturing Company, Chrysler Corporation, Hupp Motor Corporation, Willys Overland, Reo, Hudson-Essex. I believe that covers the principal ones.

Q. Is Packard included in that?

A. I didn't name Packard, but Packard is in my territory. I work on the Packard.

Q. Graham Paige?

A. Yes, Graham Paige.

Q. Motor Products?

A. Motor Products, Ainsworth Manufacturing, Joseph N. Smith.

Q. How about the Dodge Company?

A. Dodge, which has since become part of Chrysler.

Q. Le Barron?

A. Le Barron is part of the Briggs Manufacturing Company.

Q. Now, what automobiles are included in the General Motors group?

A. Cadillac, La Salle, Oakland, Pontiac, Buick Motors, Oldsmobile, Chevrolet, Fisher Body, General Motors of Canada.

[fol. 203] Q. How about the Yellow Truck? What is that?

A. Oh, yes. General Motors Truck. That has become the General Motors Truck. They merged the Yellow Coach and Cab into General Motors Truck, as I understand it.

Q. Is Studebaker Company in your territory?

A. They are not in my territory, but I work with them frequently.

Q. You make contact with them?

A. I solicited them on Triplex Safety Glass.

Q. How about Pierce Arrow?

A. The same with Pierce Arrow. They are not in my territory, but I called at their plant frequently and solicited Triplex safety glass business with them.

Q. During the years 1926 and 1927, were you in constant contact with the automobile manufacturers and body builders which you have mentioned?

A. I was.

Q. And with whom were you accustomed to discuss the question of laminated glass when you were in contact with those automobile manufacturers that you have mentioned?

A. The executives of the company, the purchasing departments, the body engineers; those were the main men I solicited on Triplex safety glass.

Q. Were you in touch from time to time during this period with the Fleetwood Corporation—if that is the correct name?

A. Through Fisher Body and and through an occasional call with Mr. Sabero. Mr. Sabero was president of Fleetwood.

Q. Was there some connection between Fleetwood and Fisher Body?

A. Fisher Body Corporation owned the Fleetwood.

Q. I direct attention particularly, then, at this time, to the Fisher Body Corporation and Fleetwood Corporation, particularly to your efforts to interest those two corpora- [fol. 204] tions. Can you state from your recollection the men of those two corporations with whom you were in touch during this period?

A. Most of my efforts were centered on Mr. W. A. Fisher at the Fisher Body Corporation in Detroit.

Q. And you had various conversations with him with respect to the question of selling him the Triplex Safety Glass?

A. The Triplex glass; yes, sir.

Q. And will you now please state what the substance of those conversations were with respect to your sales of the Triplex glass?

Mr. Christy: I object to that question, in so far as it calls for hearsay evidence. Presumably Mr. Fisher is available as a witness, and can be called.

The Master: We will hear the answer and decide later as to its admissibility. Exception noted to defendant.

A. I had a number of visits with Mr. Fisher, starting with 1927, and carrying on through 1928. Mr. W. A. Fisher agreed that he would put non-shatterable glass on the Cadillac and La Salle cars, made at the Fleetwood plant, and in the late spring of 1928, Mr. Fisher confirmed this agreement in one of my visits in his office with him. We later secured some of those orders, in which they equipped these

Cadillac and La Salle bodies made by the Fleetwood Corporation.

Q. Did you quote prices to Mr. Fisher for the Fisher Body production?

A. Yes, sir.

Q. Do you recall what those prices were that you quoted in the early part of 1928, and if you have any memorandum taken from your records, you may consult that memorandum with a view to refreshing your recollection.

[fol. 205] A. This is the standard equipment you are talking of?

Q. I am speaking now of standard equipment.

A. In 1928, Mr. Haskell and myself called at Mr. Fisher's office, and Mr. Fisher asked us to submit a proposition of Triplex Safety Glass for all the Cadillac and La Salle cars. I later submitted a schedule of prices dependent on the quantities, 1000 feet per day, and so on, up through 10,000 feet per day. Those prices ran from $2.66 down as low as $2.20, but it was based on very big volumes, 10,000 feet and over, when I am mentioning the lower price. We had been selling Cadillac and La Salle—or rather the Fisher body—a great deal of glass during 1927, for $4.80 a foot.

Q. Did you obtain any orders from the Fisher Body Company at the prices you mentioned you quoted in the early part of 1928?

A. We secured the Fleetwood production business at $2.55 a foot.

Q. Did you secure any of the business of the Fisher Body Corporation?

A. No, not on standard equipment.

Q. Did Mr. Fisher give you any reason for your failure to secure that business?

A. Yes, sir.

Q. Will you state what the reason was, please?

A. Mr. Fisher told me that he could buy duplate for a great deal less than our quotations on Triplex.

Q. Did he state any specific amount of the Duplate prices?

A. Yes, sir.

Q. What was it?

A. $1.75 a foot.

Q. That was in 1928?

A. Yes, sir.

Q. Now, you also, I understand, had some contact with the Buick?

[fol. 206] A. Yes, sir.

Q. And did you quote the Buick Corporation prices?

A. Yes; $2.81 a foot.

Q. And what time was that?

A. In 1928.

Q. What part of 1928?

A. May. It ran up as far as July before my solicitations were ended.

Q. And do you recall the name of the gentleman you were in contact with in the Buick Company?

A. Yes; I worked with Mr. J. C. Shaw and Mr. Kingston Forbes, the body engineer, and several others in the company.

Q. Who saw Mr. Shaw?

A. The purchasing agent.

Q. Did you obtain any business from the Buick Company at the price you quoted them?

A. No, sir; I was referred right back to Mr. W. A. Fisher.

Q. That is, the Mr. Fisher connected with the Fisher Body Corporation?

A. President of the Fisher Body Corporation.

Q. Did you take up with him the question of selling standard equipment for the Buick car?

A. I did; but this particular item that I am talking about here was optional equipment?

Q. This was optional equipment?

A. Yes, sir. Buick put out a letter to all their dealers, offering Buick cars equipped with non-shatterable glass, at an excess cost.

Q. Did you secure any of this optional equipment from Buick?

A. No, sir; Duplate got it.

Q. Did Mr. Fisher give you any reason why it went to Duplate instead of Triplex?

[fol. 207] A. He said he bought it at the same price, I imagine, they had with the Cadillac and the LaSalle production.

Mr. Christy: I merely wish to give notice to my opponent that my objection to testimony of this character still stands.

He can call Mr. Fisher here, I suppose. It is agreed that this objection may be continued without further repetition.

Q. Were you in contact with the executives and officers of the Hudson Company?

A. Yes, sir.

Q. Do you recall whether you succeeded in making any sales during 1927 to that company?

A. In 1927, Hudson put out a poster, offering Triplex safety glass through service, and as optional equipment, and through our distributors. That was in 1927, and ran over into 1928.

Q. Just before 1928, did you succeed in making any sales of this optional equipment in 1927?

A. None of any consequence. It went through our distributors.

Q. What price did you quote on this?

A. $4.80 a foot.

Q. What happened in 1928?

A. In September, 1928, Mr. Ostdyke, purchasing agent, and Mr. Munger, assistant purchasing agent, requested a price from me on 20,000 non-shatterable windshields. Our quotation was $2.88 a foot.

Q. For what quality?

A. Plate—Triplex plate.

Q. Try to distinguished between qualities when you give prices.

A. Any price I have named so far has been on nothing but Triplex standard plate. Mr. Ostdyke told me he had given this order to the Duplate Corporation, at approximately one dollar a foot less than our price.

[fol. 208] Q. Now, you were in contact, you say, also with the Chrysler and the Dodge. Did you quote either or both of those corporations during the year 1927?

A. Yes, sir.

Q. What was the price that you were quoting Chrysler?

A. $4.80 a foot.

Q. Did you obtain any business at that rate?

A. Yes, sir; we secured a number of orders.

Q. It has been testified to here that the standard equipment of Chrysler obtained in December, 1927, for their No. 50 Special—apparently that was in the middle of 1927

rather than December. Did you obtain that? Do you recall that instance?

A. 50 Special Chrysler?

Q. It was stated that the order was for the tonneau windshield and the front windshield. I was just asking if you were the one who obtained that order?

A. It seems to me that order passed through our office and possibly I secured it; but I have no definite memorandum with me here on that.

Q. With whom were you in contact in the Chrysler Company?

A. I called on every official, I believe, of the Chrysler Corporation, several of the members of their purchasing department, including the director of purchases, several of their body engineers and chief engineers.

Q. Who was the director of purchases?

A. Col. A. C. Downey.

Q. Can you state what you were quoting Chrysler at, in the early part of 1928—what prices you were quoting?

A. We submitted a proposition to Chrysler on December 16, 1927, around December 16, 1927, on the same basis as I mentioned previously here to the Fisher Body Corporation, one of these schedules based on quantities per day, [fol. 209] 1000 feet on up to 10,000 feet per day. Those prices ranged—there were some figures in there of $2.81 a foot, clear down through $2.66, and on to $2.20.

Q. Did you obtain any business at those quotations from Col. Downey, of the Chrysler Corporation?

A. No.

Q. Did he give you any reason why you failed to obtain that business?

A. At that time they did not place any business. I am speaking of December, 1927.

Q. Well, now, going down to the fall of 1928, were you still quoting the same prices, ranging from $2.81 to $2.20?

A. Yes, sir.

Q. To Col. Downey?

A. Yes, to Col. Downey.

Q. Did you obtain any business at that time?

A. No, sir.

Q. Did Col. Downey give you any reason why?

A. Col. Downey told me that they had decided to purchase Duplate at approximately one dollar per foot less than our quotations.

Q. After 1928, do you recall whether you made any other quotations to Col. Downey?

A. I continued to quote the Chrysler Corporation.

Q. At what time?

A. At this same schedule, for a considerable time.

Q. Did you ever get under that schedule?

A. Here recently we did.

Q. Did you ever get under that schedule in 1929?

A. Yes, sir.

Q. Do you remember what the price was that you got down to in 1929?

A. In the fall of 1929, we submitted a price of $1.90 a foot.

[fol. 210] Q. Did you obtain any orders at that price from Col. Downey or the Chrysler Company?

A. No, sir.

Q. Did he give you any reason for your failure to obtain the business at that time?

A. Col. Downey said that the arrangement they had with Duplate was on a lower basis than what I was quoting for Triplex.

Q. Now, with respect to the J. N. Smith Company?

A. Joseph N. Smith Windshield Manufacturers; they are now part of the Ainsworth Manufacturing Company.

Q. Were they a part of the Ainsworth Manufacturing Company in the year 1928?

A. No, sir.

Q. With whom in that concern, Joseph N. Smith, were you in contact with, in 1928?

A. We worked with Mr. Williams, the sales manager, Mr. Brown, the production manager, Mr. Selden, president and general manager.

Q. Do you recall what you were quoting the Joseph N. Smith Company in 1928?

A. In November, 1928, we quoted Joseph N. Smith Company for the Studebaker windshields, $2.05 a foot.

Q. Did you obtain that business at that figure?

A. No, sir; Duplate secured that business.

Q. How did you find out that Duplate secured the business?

A. Because Mr. Brown took me out and showed me some of the Duplate, and Mr. Selden told me.

Q. Did he give you any reason at that time why he gave the business to Duplate rather than you?

A. Mr. Selden told me that they had to use Duplate on these Studebaker windshield orders, by specification from the Studebaker Corporation.

[fol. 211] Q. That was the only reason that they used it in this case?

A. I would think so, as far as Joseph N. Smith.

Q. The only reason he gave to you, I mean.

A. Yes, sir; that is the only reason he gave to me.

Q. At that time, were you in touch with the Studebaker executives?

A. Yes, sir.

Q. And what executives were you in touch with, of Studebaker, at that time?

A. The president, Mr. Erskine, Mr. Vance, vice-president, Mr. Bockus, vice-president, Mr. Hoffman, vice-president and sales manager, Mr. Peterson, purchasing agent. Those were the main officials in Studebaker that I talked Triplex safety glass with.

Q. Did they give you any reason why they directed the business to go to Duplate rather than you?

A. Yes, sir.

Q. What was it?

A. Price.

Q. Price again?

A. Yes, sir.

Q. Now, going to the Packard, with whom were you in touch in the Packard Company?

A. Mr. J. H. Marks, purchasing agent; Mr. Hittle, assistant purchasing agent; Mr. Morehouse, chief engineer; Mr. E. F. Roberts, vice-president and production manager; Mr. Knapp, body engineer. Those are the main officials.

Q. Were you giving those officials of the Packard Company quotations in the early part of 1928?

A. Yes, sir.

Q. Did you continue those quotations throughout the year 1928?

A. Yes, sir.

Q. Do you remember what those quotations were, to the Packard Company?

[fol. 212] A. All of our quotations were uniform. Whenever we submitted a production price schedule to the automobile manufacturers, or the body builders, they were all the same as I have listed here as Fisher Body and Chrysler Corporation.

Q. Did you obtain any business from the Packard Company on those prices?

A. No, sir.

Q. Did the officials whom you have mentioned give you any reason why you didn't obtain that business?

A. The treasurer of the Packard Company spoke to me about the fact that Mr. McCauley, president of the Packard Company, was a brother-in-law of one of the officials of the Libby-Owens.

Q. That is all you know about the question of your failure to obtain the business of the Packard Company?

A. Yes, sir.

Q. Now, how about the Motor Products Company? Did you have any contacts with them in 1928?

A. Motor Products Corporation we visited frequently.

Q. In 1928?

A. Yes, sir. We supplied Motor Products several orders back in 1927, some in 1928, at $4.80 a foot.

Q. That $4.80 a square foot, of course, was the optional equipment?

A. I believe so.

Q. Did you quote them on these large quantities ranging from 1000 square feet a day to 10,000 square feet a day?

A. My recollection—I have no note here definitely—is that we submitted one of those production price schedules to Motor Products in 1928.

Q. Who does Motor Products manufacture for—what car?

[fol. 213] A. Motor Products were making windshields in 1928 for Packard, Ford—several of the car manufacturers; I believe Chrysler.

Q. Was there any talk between you and the executives of that company with respect to price conditions?

A. Frequent talks.

Q. What was the substance of your talk?

A. That we were about $1 a foot higher than Duplate.

Q. Coming now to the Ainsworth: will you please state the full name of that company?

A. Ainsworth Manufacturing Company.

Q. Is that a body builder?

A. Windshield manufacturer.

Q. With whom were you in touch in that company?

A. I had some visits with Mr. Ainsworth. Most of our work was with Mr. Tompkins, purchasing agent.

Q. Were you quoting the Ainsworth Manufacturing Company prices in 1928, and if so, state what those prices were.

A. I have no record here of quoting Ainsworth in 1928.

Q. And you have no recollection of what the prices were that you quoted them? Is that it?

A. I do not recall quoting Ainsworth Manufacturing Company on any standard equipment in 1928.

Q. Did you quote them in 1929?

A. Yes, sir.

Q. What prices were quoted at that time?

A. October, 1929, we quoted $1.90 per foot.

Q. For what car was that?

A. Marmon.

Q. Did you obtain the order at that quotation?

A. We filled some for Ainsworth Manufacturing in 1929. I have no record here definitely at what price we supplied those orders. On this $1.90 quotation in October, 1929, [fol. 214], that you have just asked me about, Mr. Tompkins placed that business with Duplate.

Q. Did he give you any reason why he placed it with Duplate?

A. Mr. Tompkins told be he bought those windshields for $1.75 a foot.

Q. What is the Le Barron Company, and give the correct name for it, if you have it?

A. Le Barron Body Company, I think. I am sorry I am not sure on the firm title.

Q. For what automobile concern does the Le Barron manufacture?

A. Le Barron are part of the Briggs Manufacturing Company, and they make custom bodies for Stutz.

Q. Did you quote the Le Barron Company prices during the year 1928?

A. Yes, sir.

Q. What prices did you quote?

A. We supplied Triplex for Le Barron during the latter part of 1928 and the first part of 1929.

Q. At what prices?

A. I am not perfectly sure; I think it was $2.55 a foot. I haven't the memorandum here. I have a memorandum of the quotations we later made them on June 4, 1929, which was $2.25 a foot. I did not secure that business at $2.25 a foot; Duplate secured it.

Q. With whom in the Le Barron Company were you in touch in making those quotations?

A. Mr. Manning, production manager, and Mr. Gross purchasing agent, and Mr. Taylor, I believe, was chief inspector; all three were familiar with my prices.

Q. Did they give you any reason why you didn't obtain the business at that price?

A. Mr. Manning told me they bought Duplate on that order for $1.90 per foot.

[fol. 215] Cross-examination.

By Mr. Christy:

Q. May I see the notes from which you have been testifying?

A. Yes, sir.

Q. Do you always believe what a buyer tells you as to quotations made by your competitors?

A. No, sir.

Q. Now, as I understand the situation, from your direct testimony, along about the end of 1927, you were quoting $4.80 per square foot on what is called optional equipment. Is that right?

A. Yes, sir.

Q. And in how large quantities did you sell your product at that price?

A. We secured some orders in lots of 100 cars—100 bodies.

Q. You would say—and I am guessing at this—the orders would usually run a thousand square feet or less?

A. Ordinarily I would say possibly smaller than a thousand square feet at a time.

Q. Around this $4.80 price, was there any variation for size of the individual pieces?

A. No, sir.

Q. That was flat rate, $4.80 a square foot?

A. Yes, sir.

Q. Then about the same time you commenced to quote a standard equipment, as I understand; that is, toward the end of 1927?

A. Yes, sir.

Q. And there you quoted prices ranging from $2.81 a square foot down to about $2.20 per square foot, depending upon quantity of the order. Is that right?

A. That is correct.

Q. Was there any differential made for size in there?

[fol. 216] A. Yes, sir.

Q. Well, take the $2.66 range. That is one which you gave. What differential would you have for sizes there?

A. The door light and side light would be cheaper.

Q. Cheaper than the windshields?

A. Cheaper than the windshield sizes.

Q. About how would those sizes run?

A. In area?

Q. Yes.

A. The windshields would run ordinarily around a little better than four square feet, average; the side lights three feet, and below.

Q. Did these quotations include edge work, or was that extra?

A. I have no note in front of me here that I can tell you certainly on that. My recollection was that we charged extra and quoted extra for edge work.

Q. If you did, that doesn't appear on your notes here. Is that right?

A. I don't have a definite record on here, but I think I can quite safely tell you that edge work was always in addition to any of these schedules I have mentioned.

Q. Did you allow any discounts on these prices?

A. No, sir; nor rebates.

Q. Referring to the Chrysler Company, did you connect that with one of these bodies or windshield concerns, or were all your dealings direct with Chrysler?

A. We supplied some material for Chrysler bodies that were made by custom body builders.

Q. And was that Fleetwood or Fisher, or any of these people you have mentioned?

A. Well, Le Barron made some bodies for Chrysler. I don't recall our supplying anything to Fisher for Chrysler.

[fol. 217] Q. I do not remember your testimony clearly. Did you say that you took any orders for standard equipment from Chrysler in 1928?

A. Not what I would classify standard equipment.

Q. Did you take any orders from them at this $2.81—$2.20 rate?

A. No, sir.

Q. That is, whatever you sold Chrysler in 1928, was sold at your $4.80 rate, was it?

A. That is my recollection.

Q. Did I understand you to say that it was represented to you that Studebaker was buying laminated glass from Duplate in the fall of 1928, at $1.90, or less, per square foot?

A. Mr. Chanter, the president of Pierce Arrow, told me on November 2, 1928, that Duplate's price to them—Pierce Arrow and Studebaker—would be $1.90 a foot.

Q. I forgot to ask you whether, in quoting prices, you gave any differential for quality of the plate glass, as between what is called silvering quality and what is called glazing quality?

A. On everything I have testified to here, our quotations were all standard plate glass.

Q. That is, glazing quality?

A. What we call our Triplex standard quality.

Q. Do you ever get a requisition for glass called mirror glass, or silvering quality plate?

A. Yes, sir; that is what we were called upon to furnish Lincoln Motor Company.

Q. Did you make any differential for that?

A. We generally asked more for the silvering quality.

Q. You wish to be understood that some of these buyers told you in so many words that Duplate's price was one dollar a square foot less than yours?

[fol. 218] A. Yes, sir. I answered your first question briefly, and I would be a poor salesman if I believed everything that was told me, but I have yet to find W. A. Fisher, Charles Ostdyke and Colonel Downey, when they told me a competitor's price, but what they were telling me the absolute truth, and that is over a period of quite a few years.

Q. I don't charge that any of these particular officials did, although I can make a reservation that you may have misunderstood them, but you do not mean to testify that all of these representations of which you have spoken in your direct examination were implicitly believed by you?

A. I believed every one that I have testified to here, and have good reason to believe them.

Q. Did any of these people make any representations to you as to Libby-Owens' prices?

A. None of the people I have testified to here. I can't recall any representations to me of what Libby-Owens prices were.

Q. Then am I to infer from your testimony that in none of these examples of alleged price cutting, which you have mentioned, did Libby-Owens figure as a competitor?

A. They do not, with the exception of Packard.

Redirect examination.

By Mr. O'Shea:

Q. Mr. Hunt, in your cross-examination you said that an executive connected with the Pierce Arrow stated what Studebaker was paying for glass. Was there some connection between Studebaker and Pierce Arrow at the time of that statement, do you know?

A. Yes, sir. Pierce Arrow is owned by the Studebaker Corporation, and the reason I answered it, as information Mr. Chanter, of Pierce Arrow, had given me, was because [fol. 219] of the date I understood Mr. Christy asked this of me.

Q. What date was that?

A. I believe Mr. Christy mentioned November, 1928.

Q. Was that the date you did get that information from Mr. Chanter?

A. Yes, sir.

Q. Was there some connection at that date between Studebaker and Pierce Arrow?

A. Yes, sir.

Q. Do you know what the connection was, of your own knowledge? If not, don't answer it.

A. I don't quite understand you.

Q. Do you know what the connection between Studebaker and Pierce Arrow was of that date?

A. Studebaker owned Pierce-Arrow.

Q. Was Mr. Chanter ever an employee or official of the Studebaker Company?

A. Mr. Chanter, when I first knew him, about fourteen years ago, was assistant to Mr. Wollering. He later became assistant to Mr. Erskine, president of the Studebaker—all of this was in the employ of the Studebaker Corporation—and then director of purchases, and I believe it was in 1928 that he went to Buffalo to run the Pierce Arrow plant.

Q. For the Studebaker?
A. For the Studebaker Corporation.

H. S. WHERRETT, a witness produced on behalf of the plaintiff, having been duly sworn, testified as follows:

Direct examination.

By Mr. O'Shea:

Q. Mr. Wherrett, what office do you hold in the Duplate Corporation?
[fol. 220] A. President.
Q. How long have you been president of that company?
A. Since the organization.
Q. As I understand it, you are also president of the Pittsburgh Plate Glass Company?
A. That is correct.
Q. And have been president of that since the death of Colonel Brown?
A. Captain Brown, yes; a little over three years.
Q. You have been president of the Pittsburgh Plate Glass Company for a little over three years?
A. That is right.

* * * * * * *

Tuesday, May 19, 1931, at 10 o'clock A. M.

* * * * * * *

Q. Was there any lease or agreement between Pittsburgh Plate Glass Company and Duplate Corporation, with respect to either the Duplate Building or the land on which the building was built?
A. There was a lease for land rental.
Q. And that is at the general offices?
A. I think it is.
Q. And you have sent for that
A. Yes, sir.
Q. It has been testified here, Mr. McHenry, that Duplate Corporation received a preferential price from Pittsburgh Plate Glass Company on its plate glass. Will these requisition slips and shipping slips, which you are going to produce, show what that preferential price was?

A. They will not.

Q. Would the bills from Pittsburgh Plate Glass Company to Duplate Corporation show what the price was?

A. They would.

* * * * * * *

[fol. 221] Q. Mr. McHenry, you have stated that this so-called preferential price, or discount for pyralin from du Pont Viscoloid to Duplate Corporation, started in June, 1929. Do you know of any reason why that was started in June and didn't apply to the previous months?

A. We received notice in the Comptroller's office, on July 24, that du Pont Viscoloid was giving new prices, retroactive to June 1, 1929. At that time the Pittsburgh Plate Glass Company also gave a 10 per cent. discount on all purchases of glass from Pittsburgh Plate Glass Company, of 10 per cent. Prior to that time, Duplate had been paying Pittsburgh Plate Glass Company at the regular selling price.

Q. Do you mean by that, market?

A. Market price. And on June 1st the Duplate Corporation received the lower price for pyralin; also glass.

* * * * * * *

SYDNEY W. CAULFIELD, a witness produced on behalf of the plaintiff, having been duly sworn, testified as follows:

Direct examination.

By Mr. O'Shea:

Q. Mr. Caulfield, you are connected with the Triplex Safety Glass Company of North America?

A. Yes, sir.

Q. In what capacity?

A. Vice-president and treasurer.

Q. How long have you been vice-president and treasurer?

A. I have been treasurer since I first went with the company in 1927; I was made vice-president this year.

[fol. 222] Q. When in 1927 did you first go with the company?

A. November.

Q. As treasurer, will you state briefly what your duties are?

A. This being a relatively small company, the duties of a treasurer are slightly more comprehensive than they might be in a large company. I had charge of all the accounting, installed the cost system, and served as a contact with the Ford Motor Company, because of our cost-plus contract, and generally got into all questions of policy of the company.

Q. Did you have any connection with the price policy adopted by the Triplex Safety Glass Company?

A. Yes, sir.

Q. Was it your duty to follow up and figure the prices that would be charged the customer?

A. It was one of my first duties to estimate what we could sell glass for in large quantities, on a large production basis.

Q. Was there a Mr. Calhoun connected with your company when you first went there?

A. Yes, sir.

Q. What capacity was he in?

A. He was salesman.

Q. Among your other duties did you have any connection with him as a salesman?

A. Yes, sir, with Mr. Calhoun, Mr. Haskell and Mr. Hunt. All three functioned on sales.

Q. And established the sales policy?

A. Yes, sir.

Q. And you attended those meetings?

A. Yes, sir.

Q. And are familiar with the sales policy of Triplex Safety Glass Company of North America since you made your connection with that company?

A. Yes, sir.

[fol. 223] Q. Are you familiar with Schedules "J" which have been introduced in this case as Exhibit 8, for identification?

A. I have seen it and studied it.

Q. Will you please state what the experience in your company shows to be a normal breakage in raw stock?

A. We would consider half of one per cent. high for breakage in raw stock.

Q. And what do you define as coming under the term of "Breakage" in raw stock, and how such breakage would occur?

A. I think I am using the term in its dictionary sense—what is actually broken; that is, from a rack of glass a man might pick one up and drop it and it would break.

Q. And it is breakage occasioned by handling such as that that you consider normal breakage?

A. Yes, sir.

Q. It has been testified to here that there are possibilities of extraordinary accidents happening, such as a man running an electric truck into a stack of glass. Can you state whether or not from your experience such extraordinary accidents happen very frequently?

A. Not frequently. Of course, we don't happen to have electric trucks.

Q. How do you handle your business?

A. We transport most of the glass on small hand trucks.

Q. From point to point in your factory?

A. Yes, sir. Accidents of that nature are extremely rare. I think the largest one I know of was a truck that had fifty lights on, that was upset.

Q. Were all of them destroyed?

A. I imagine they would be.

Q. Do you think it possible that if an electric truck ran into a rack containing a rack of glass, that it would completely destroy 3500 lights of glass?

[fol. 224] A. 3500 lights is almost a carload. I can't conceive of such an accident in our place.

Q. Do you have in your factory an operation of cutting glass—raw glass?

A. Yes, sir.

Q. Will you explain what that operation consists of?

A. Glass is purchased in rectangles or standard sizes. When a customer orders laminated glass, the raw glass is cut to the required shape from the next largest rectangle from which such finished glass can be cut.

Q. Can you give an example of that operation of cutting glass in sizes, specifying the bracket which you purchased?

A. Yes. A frequent purchase of raw glass would be, by way of example, 14 by 44 inches, which is a size frequently used for windshields. The contour of the shield—or that glass would be cut to follow the contour of the actual fin-

ished product, but the customer would be charged as though the size were 14 by 44, there being theoretically no waste.

Q. That is your system of purchasing raw glass and selling laminated glass?

A. Yes, sir. I say, there would be theoretically no waste. I mean, from the actual cutting of the glass. Occasionally, you will get a little breakage in that operation. Our experience runs about one-third of one per cent. Our operators that break three in a thousand are either corrected quickly or let go.

Q. Can you explain what there is in your operation that causes a cutting breakage or loss?

A. I said theoretically there can be no cutting wastage, because we charge the customer with the size of the rectangle from which the glass can be cut. In actual practice, if, being a long way from our source of supply, we didn't have the right size, we might have to use an oversize, but [fol. 225] our policy has been to hold up shipments as much as possible until we could get the right size glass. We did, in the early days, when we were buying foreign glass, occasionally take cutting losses, where we didn't have the right size in stock.

Q. That is to say, in some instances, you being removed some distance from your source of supply, were obliged to cut more from a given glass bracket than you ordinarily would if you had that bracket size in stock. Is that correct?

A. In the beginning, when we purchased from Czechoslovakia and England, we had to more or less estimate what sizes we would need; possibly find ourselves loaded up with sizes that were not moving rapidly, and would sometimes cut those to a loss, although we are still carrying some of that three-year-old glass rather than take the loss. It moves slowly in the right size.

Q. When you obtained the American source of glass, was there much of that character of loss?

A. Very little, after we got deliveries.

Q. Now, a second source of cutting breakage is occasionally, is it not, in this cutting down of a particular bracket to the next lowest size? In other words, are there sometimes breakages that would be caused by that cutting, or by cutting the contour?

A. No, sir; there is no wastage in cutting the contour, because the customer is charged for the size of the glass from which the contour can be cut.

Q. I understand that, Mr. Caulfield, but it has been testified to here, as I understand it, by Mr. Datz, that a loss which he experienced in his factory was occasioned from cutting to a particular contour or cutting from these bracket sizes. In other words, in the cutting operation the glass was broken. Have you had any experience in that?

[fol. 226] A. We just mentioned that we might get a third of one per cent. breakage in breaking glass, but that is not——

Q. Does that third of one per cent. include all of this cutting breakage?

A. Yes, sir; it includes cutting breakage.

Q. What else does it include besides cutting breakage?

A. That is all. We presumably have no cutting waste. I think it was stated that occasionally when they made a light 16 by 46, they had to use an 18 by 48 bracket. That might be true in very rare instances, where 16 by 46 is the size of the finished light and needs a little finishing, so that they must use a larger size glass. I don't know what their practice is. We charge for the larger size glass and have that arrangement with our customers, so a finished light that might happen to come exactly 16 inches by 46 inches, and require a quarter of an inch extra for finishing, we would charge an 18 by 48, and we have done so with our customers, pointing out to them that if they decrease the size an eighth of an inch and make it 15⅞, say, by 45⅞, it will then come out of a 16 by 46 glass, and I think that is the custom in the industry. I am not sure of that point.

Q. Passing now to the question of pyralin. From whom did you purchase your pyralin?

A. We have four sources of domestic supply and two sources of foreign supply.

Q. Among your domestic supplies, do you purchase from du Pont Viscoloid Company?

A. We do.

Q. Now, please describe briefly the manner in which you purchase pyralin?

A. Pyralin originally was made in only one size, 20 inches by 50 inches, which was a stock sheet, used largely for making open curtains, side curtains, on open cars. Orig-

[fol. 227] inally that size sheet was purchased by us and cut to the required dimensions of the glass we were fabricating. Naturally, it was advantageous to have other sizes made, so that they would be cut to less wastage, and gradu-

ally, over the period of two or three years, there has been added possibly some eight or ten other sizes, namely, 20 by 36, 36 by 60, those being the sizes which would cut most economically for the general run of automobile windows; and some have been purchased cut to size.

Q. What is meant by "cut to size"?

A. We have the pyralin manufacturer blank out generally with a die the pyralin to the exact size that we are going to use. That is done when you have a large order of one particular size, such as Ford windshields or Ford body lights.

Q. So that when you order pyralin from your source of supply, including the du Pont Viscoloid Company, you specify either the standard size sheets manufactured by those pyralin manufacturers, or a specified size?

A. Yes, sir.

Q. Are there any other specifications in your orders for pyralin?

A. Of course, over the period of time we have specified just what the ingredients should be and the amount of camphor content, for example, the amount of haze that would be tolerated—should I explain that there is a little haze in pyralin—the amount of lint that might be mixed in with the pyralin—a little is not too objectionable; the freedom from dust, and any number of specifications regarding the quality.

Q. So that your orders of pyralin, then, would be according to these specifications that you have mentioned, and in addition thereto the size of the sheets which would either be a standard size manufactured by the pyralin manufac- [fol. 228] turer or a special size which you wish?

A. Yes, sir.

Q. In your operations, do you, on receipt of pyralin from your source of supply, make an examination, for the purpose of determining whether the pyralin is up to specification and according to size?

A. Yes, sir. That is, it may not be immediately upon receipt—before its use. It may be stored for a week or two before examination, but it is all inspected.

Q. And have you had any cases where, upon examination of the pyralin received by you from your source of supply,

it was discovered that the pyralin did not come up to specification?

A. Yes; plenty.

Q. And what do you do in instances where you have determined that the pyralin shipped to you by the pyralin manufacturer does not come up to specification?

A. Ship it back.

Q. Have you ever had a case when credits were not granted?

A. On anything returned?

Q. Yes; because of failure to come up to specification?

A. No. We have had cases where we could use it for other production, and have received an adjustment of price therefor; either we returned the pyralin for full credit, which credit has always been granted, or else we take a sheet—They send their inspectors, and say, "Well, that sheet is 20 by 50, and the defect is up at one end. Couldn't you cut it down to the 20 by 36, and pay us at that rate"? That has been done.

Q. Have you ever had occasion to find pyralin which has been cut to size, but defective as to specifications, and unsuitable for use in laminated glass?

A. Yes, we have.

[fol. 229] Q. And in instances of that kind, what do you do with the pyralin?

A. Return it.

Q. Have you received price adjustments from the du Pont Viscoloid Company for pyralin that did not come up to size, and which your examination determined was unsuitable for use in laminated glass?

A. We return it for full credit. We bill them immediately upon return.

Q. I say, have you done that with pyralin purchased from du Pont Viscoloid Company?

A. du Pont and all the others.

Q. In this condition that you speak of, of cutting down to the next even size of a particular standard bracket size, you stated there was no theoretical loss. Do you distinguish between theoretical and practical loss?

A. I mean, there was no loss, unless we used the wrong size.

Q. You mean, unless you used the wrong size bracket?

A. Yes.

Q. But starting with the proper size bracket for a particular order, and cutting down to the size of that order, since you charged the customer for the bracket size, there is no practical loss—either practical or theoretical?

A. That is correct.

Q. You were with the Triplex Company in 1927?

A. The latter part.

Q. The latter part of 1927?

A. Yes, sir.

Q. Where was its factory located at that time?

A. Hoboken, New Jersey.

Q. And what was its production capacity at that time?

A. At the time I joined the company it would be approximately 1200 lights, a twenty-four-hour day. They [fol. 230] didn't work twenty-four hours at all times, but that was the capacity. The pressing capacity was the controlling factor. They had twelve presses with a cycle of four to an hour per press. That would be ninety-six per press per day for twenty-four hours. So the answer of 1200 is approximately right; it is 12 times 96.

Q. It has been testified to here you increased your capacity in the early part of 1928?

A. Yes, sir.

Q. That is the fact, is it?

A. Yes, sir.

Q. That increase was both as to floor space and as to production capacity determined in the presses?

A. Yes, sir; we ordered 100 additional presses and decreased the pressing time slightly, so that we estimated a capacity of from 10,000 to 12,000 lights per day in the new factory.

Q. How much is that, stated in square feet?

A. It would be that multiplied by three and a small fraction—say 36,000. The average window light is three feet; the average windshield is four.

Q. And that 36,000 square feet per day is on a three-shift basis, or 24-hour production?

A. Yes, sir.

Q. Was there any further increase in your capacity from the early part of 1928 down to June, 1930?

A. Yes, sir. We have changed the processes slightly, and decreased the pressing time; also, put in other apparatus that has given us a larger production capacity. I

would say now it is about fourteen or fifteen thousand lights per day.

Q. Was that change——

A. That was made gradually. It was not at any one particular time.

(Recess until 2 o'clock P. M.)

[fol. 231] Afternoon Session

SYDNEY W. CAULFIELD resumes the stand.

Direct examination (continued).

By Mr. O'Shea:

Q. About what was the capacity, let us say, during the year 1929?

A. 1929, I would say our production capacity averaged 12,000 lights a day, which would be, if they were all windshields, 48,000 feet; or 36,000, if they were all door lights. So that the capacity was somewhere between 36,000 and 48,000 square feet per day.

Q. Still considering a day as twenty-four hours?

A. Yes. I am giving total capacity.

Q. Now state the capacity of your plant during the first five months of 1930?

A. I should say approximately the same as 1929.

Q. That is to say, from 36,000 to 48,000 square feet per day of twenty-four hours?

A. Depending upon the size.

Q. Depending upon the size of the lights that were being run through?

A. The average size of the lights.

Q. Now, please state what was your total production of all classes of goods in the year 1927?

A. May I refer to notes?

Q. I assume the notes you are about to refer to are figures taken from the books of the Triplex Safety Glass Company of North America?

A. Yes. In 1927, 49,669 square feet; that is plate and sheet. The records don't readily show how much was each. I would have to go back and make a detailed check of that.

Q. Now, in the year 1928, please tell me what the total production of plate was in that year?

[fol. 232] A. I have the production of that year subdivided. First, is plate glass, 161,564 square feet; that is laminated glass. Sheet, exclusive of the Ford contract, was 51,515. The shipments under the Ford contract were 1,924,781 square feet.

Q. That makes a total footage of about——

A. 2,137,860.

Q. Now, let us have similar figures for the year 1929.

A. Similar figures for the year 1929: 195,788 square feet plate; 181,041 square feet of laminated sheet, exclusive of the Ford contract requirements. Ford, 6,236,524 square feet. That adds up to 6,613,353 square feet.

Q. Have you your production figures for 1930, for the first five months?

A. No; I haven't got them for the first five months. I can get those by wiring my assistant.

Q. During the year 1928, at what prices were you selling your plate glass and sheet glass, respectively?

A. That would depend on whether it was optional or standard equipment.

Q. Well, go back to 1927, and tell us what your records shows you were selling plate glass and sheet glass, respectively?

A. 1927, showed $4.80 base price on plate, and $3.60 on laminated sheet. I use the term "$4.80," meaning, as I stated, a base price. There were occasional little additions for extras, such as cutting notches or drilling holes, or boxing charges, I think; but that is probably understood that occasionally there would be surcharges for extras.

Q. Were all those sales in the year 1927 made under the term that we have been using here as optional equipment?

A. I think practically all were, with one exception. There was a Chrysler order, which has been referred to, [fol. 233] which was taken at $4.50, and that was for all of a certain model sport phaeton that they brought out.

Q. Was that the order that was for the front and tonneau windshields, and was for fifty special bodies?

A. Yes, sir.

Q. So that outside of that order, all the rest of the sales were made——

A. Optional equipment basis.

Q. And at these prices you have mentioned, $4.80 or $3.60?

A. With, of course, the possible exception we might have given a piece away as a sample.

Q. I am speaking of sales. I don't consider a piece given away a sale.

A. There might have been a sale or two to an individual at half price, or something like that.

Q. At the end of 1927, was there a conference among your executives to consider another price policy than had theretofore prevailed?

A. Yes, sir. The fact that we had obtained the Ford contract in October, 1927, led us to believe that the time was ripe when other manufacturers could be persuaded to take laminated glass on as standard equipment, and as cost accountant I was requested to figure out what might be a logical price to establish for manufacturers who would take on laminated glass as standard, either in one or more models.

Q. And did you submit figures at that conference?

A. I did.

Q. Did those figures have to do solely with the prospective business on standard equipment?

A. Yes, sir.

Q. For optional equipment, what was the future policy to be?

A. They remained the same at that time.

Q. Have you your working papers that you submitted to that conference?

[fol. 234] A. There were two conferences, Mr. O'Shea, and I have memorandum here showing how three tables, three schedules of established prices, were made up. Shall I submit them or explain them?

Q. And submitted at that conference?

A. At a series of conferences.

Q. Will you produce those working sheets?

A. (Witness does so.)

Q. Does this go with it? (Indicating a separate paper.)

A. Yes, that goes with it.

Mr. O'Shea: Counsel for plaintiff offers in evidence the documents submitted by Mr. Caulfield, consisting of three memoranda and two work sheets which were submitted to the conference, and ask that they be marked Plaintiff's Master's Exhibit No. 19.

Mr. Christy: Objected to as immaterial, and apparently needlessly encumbering the record. If my opponent thinks it material to develop the prices charged by plaintiff at the time stated, I suppose he is at liberty to do so; but I cannot see that the methods by which the price or prices were reached have anything to do with this case.

The Master: We will admit it for the present and hear the testimony.

Q. Mr. Caulfield, will you please explain the various prices that appear on here, stating which of them went into effect at a particular time, how long it remained in effect, and when the second sheet or tabulation went into effect, and how long it remained in effect?

A. The first sheet is divided into three groups; the first group of prices was based on the then present prices of glass and celluloid. Glass at that time had to be purchased [fol. 235] from foreign sources, and was rather expensive, more expensive than the domestic. Celluloid was at a fixed price at that time; that is, there was a definite price. The first table was gotten up and was used first as a basis of a quotation to Fisher Body on December 8, 1927. The prices are divided into four qualities: that is, windshields of plate, other lights of plate, windshields of sheet, other lights of sheet. Each of those was subdivided into four groups, dependent on quantity; one covering orders up to a thousand feet a day, the second up to two thousand, the third up to five thousand, and the fourth up to ten thousand. There are two other lines shown on this sheet for a special windshield price, which was a little bit higher. That was to be the basis of a quotation to Hudson on a quantity at that time. The second group of prices which, if I may, I will refer to as group "B" hereafter, was gotten out three days later. The reason for a change within three days was that Mr. Haskell persuaded the celluloid suppliers to reduce the price on a sheet of celluloid from $1.50 to $1.15, effective at once, so that this table "B" became the revised established price as of that date. In that same period, at about that same time, Mr. Haskell, in an attempt to reduce the price of raw material, not only obtained the reduction from the celluloid company, but obtained a statement that within three to six months domestic glass would be available, and the prices at which it

would be available were quoted. Immediately at that time we figured out what the price would be, giving effect to that lower glass price when, as and if it were obtained, and these two tables "B" and "C" were quoted simultaneously to Fisher and others, with the statement that our price would be "B," until the domestic glass of satisfactory quantity and quality was obtained, at which time "C" would become effective. Tables "B" and "C" were used practically throughout '28 or up towards the end of '28.

[fol. 236] Q. Now, will you just state on the record what the prices were on the table which you have referred to as table "B," and what the prices were that you have referred to as table "C"?

A. "B":	Up to 1,000 sq. ft. per day	Up to 2,000 sq. ft. per day	Up to 5,000 sq. ft. per day	Up to 10,000 sq. ft. per day
W/Ss-Plate	$3.23	$3.16	$3.06	$2.79
Other Lts.— Plate	2.96	2.87	2.77	2.50
W/Ss-Sheet	1.87	1.79	1.70	1.41
Other Lts.— Sheet	1.80	1.72	1.62	1.34
"C":				
W/Ss-Plate	$2.81	$2.74	$2.64	$2.37
Other Lts.— Plate	2.66	2.57	2.47	2.20
W/Ss-Sheet	1.87	1.79	1.70	1.41
Other Lts.— Sheet	1.80	1.72	1.62	1.34

Figures were made up in the period from December 8 to December 11, 1927. The date of December 11, 1927, is fixed in my mind, because that was a Sunday. I spent that day at Mr. Haskell's home. He was leaving that night to see Mr. Fisher, and wanted these quotations. We had to work rapidly, and this yellow slip was the slip that he took with him, which showed in the condensed form the information I have just given, namely, the original Fisher quotation of December 8, 1927, the new quotation with the [fol. 237] new celluloid price, and third, the new quotation when glass should be obtained at the lower price. These prices included all necessary edge work. In table "C"

prices ranged from $2.81 down to $2.20 per square foot, dependent on quality and quantity.

Q. That was for windshields?

A. Windshields ranged from $2.81 to $2.37; body lights, from $2.66 to $2.20, under the new glass prices when they became effective.

Q. Now, your table that you have referred to and have had written in the record as Table "B," was adopted at this price conference in the latter part of December, 1927?

A. Yes, sir.

Q. And how long did the prices on that table remain effective?

A. They were always quoted currently with the Table "C," with the statement that as soon as the glass price came down, the price of laminated glass would come down. In all big companies, large productive users, that was done. In the case of some of the smaller companies, we didn't notify them of the expected reduction on glass price, because they were bidding for current deliveries. It would depend largely whether we were talking about immediate delivery or something that might be deferred a while. In reality we got our first shipment of glass at the lower price in February, 1928, which was not highly satisfactory, and it was not until about June or July that we really felt safe in relying on the domestic source.

Q. So the Table "B" was the established price for standard equipment up until July, 1928, and thereafter Table "C" was used as the established price for standard equipment?

A. Yes. I should say June we felt confident of the glass supply, but the table was quoted all through the first six [fol. 238] months to be effective until we did obtain the glass.

Q. We understand that, but I was trying to get on the record when Table "C" actually went into effect and was quoted for present deliveries at those prices?

A. Around about June we began to get our shipments of satisfactory quality. These tables were all based on glazing quality of glass.

Q. Referring now to such business as was done with the Cadillac Automobile Company. That, I understand, was done through the Fisher Body Company and the Fleetwood Body Company. Is that correct?

A. Yes, sir.

Q. Were there any changes on quotations to Fisher or Fleetwood during the year 1928, after Tables "B" and "C" went into effect?

A. Yes, sir.

Q. Please state what those changes were and what the reasons for them were?

A. Tables "B" and "C" had been given to Mr. Fisher on December 12, 1927. Along about April of 1928, we had to put in a lower price quotation to Mr. Fisher, and did so, put in a lower quotation at $2.05 for all of the General Motors requirements. We could not get the business.

Q. Was any other subsequently quoted to the Fisher or Fleetwood companies?

A. Yes, sir. In September of 1928, the contacts having been maintained as indicated by the records, we were again asked to bid, and bid $2.05 for all General Motors business, and were offered that portion of the business that was made by Fleetwood Body Company in the east. They make some very special custom-built bodies for Fleetwood. When this was offered to us, we advised Mr. Fisher that we could not take that portion of his business, which was relatively small, at $2.05, and received $2.55 for it.

[fol. 239] Q. You mean, you quoted $2.55 for it?

A. Quoted and got the business. We delivered under that order, beginning in October, I believe, and continuing for approximately six months.

Q. Now, going to the Stutz business. What was the situation there with respect to these tables "B" and "C"? Were they quoted to the Stutz Company?

A. A quotation was made to the Stutz Company—I would like to explain one thing before that. In March of 1928 we considered whether we would use the same base tables with a reduction, if there was no edge work, and we estimated that there were eighteen lineal inches of edge work for every square foot in area of glass. Based on that average, we authorized our sales department to figure their quotations, if they were asked to bid on a specific blueprint, at nine cents under the table, adding half a cent per lineal inch for actual amount of edge work. The Stutz quotation was based on a deduction of nine cents on the windshield from Schedule "B". The same is true of the body lights, which were of sheet. When the actual order or contract was signed by Stutz, in reply to a request for

lower quotations, as has been testified to, the contract was signed at $2.25 a foot for unsealed glass plate, and $1.45 a foot for laminated sheet, unsealed. We had made our offer in two ways, namely, $2.25 unsealed and $2.55 for the sealed, on plate, and $1.45 and $1.55, respectively, on sheet. The seal is the binder which prevents deterioration. The contract was signed, and as is in the record, on the unsealed price, with the statement that it was to be unsealed. Before we commenced deliveries, they requested us to ship the sealed at the sealed quotations, so that our actual billings to Stutz were at $2.55 for plate, $1.55 for sheet, sealed; whereas, the contract itself calls for $2.25 and $1.45, respectively, unsealed. In May of 1929 we were forced to reduce our price to Stutz to meet their complaints, of being able to purchase lower, and gave them the sealed product [fol. 240] at $2.25 for the plate and $1.45 for sheet from then on.

Q. Was there any other reduction in the Stutz prices?

A. I believe there was a reduction necessitated to $2.05, just about the time Stutz got into financial difficulties.

Q. Now, passing to the Studebaker—and we are including in that Pierce-Arrow, because, as I understand, purchases were made through the one department—were the Tables "B" and "C" quoted to Studebaker during the year 1928?

A. I so understand from the records.

Q. And was there any change from those quotations to Studebaker during the year 1928?

A. 1928, we quoted in accordance with the Tables "B" and "C".

Q. There was no change during the year 1928?

A. No, sir.

Q. Was there any change to Studebaker and Pierce-Arrow during the year 1929?

A. Yes, right about the beginning. We quoted $2.15. June, 1929, we quoted $1.90.

Q. Were there any subsequent reductions in your quotations to Studebaker and Pierce-Arrow?

A. January, 1930, we quoted $1.90, including edge work, and $1.75 without edge work. That was our lowest quotation to Studebaker or Pierce-Arrow during that period.

Q. Now, passing to the Chrysler Company. Were the tables "B" and "C" quoted to that company?

A. Yes, sir.

Q. And were there any reductions in quotations during the year 1928 to Chrysler?

A. Yes. In the fall of 1928, Chrysler intimated that he was going to place his standard equipment, and asked us to [fol. 241] bid, and we bid in accordance with table "C". We didn't get the business.

Q. Was there any subsequent reduction on quotations to Chrysler than Table "C"?

A. I find no others in the record.

Q. Going now to the Hudson situation: Were the Tables "B" and "C" quoted to Hudson?

A. I find from Master's Exhibit 19 that was put in, an indication that Hudson was quoted first on December 12, 1927, which was the day Mr. Haskell was in Detroit to see Mr. Fisher. The work sheets indicate that Hudson was quoted in accordance with those schedules, plus a surcharge, and the reason given as shown on the work sheet is, the Hudson windshield was only 3 1/3 square feet, and at that time 20 by 50 was the standard celluloid sheet. Other windshields averaged about 4½ and because there was so much more waste in this, we added a surcharge. In 1928, when we again quoted Hudson, in accordance with Table "C," we again added a surcharge, which I believe was seven cents in our quotation.

Q. Do your records show any change from Tables "B" and "C" on quotations to Hudson?

A. September, 1929, quoted $1.90 per square foot.

Q. And change after that?

A. I don't find any in my record?

Q. Passing now to the Nash Automobile Company, do your records indicate quotations to Nash of Tables "B" and "C" during 1928?

A. Yes, sir.

Q. Were there any changes in the quotations to the Nash Company, changes from Tables "B" and "C"?

A. Not in 1928. Nash was not particularly interested in laminated glass in 1928, and it was not until well into '29 that they actually were ready to go into laminated glass.

Q. Well, was there a change in 1929?

[fol. 242] A. We quoted $1.90.

Q. To the Nash Company?

A. Yes; and did not get the business.

Q. Was there any change after 1929?

A. January, 1930, we quoted prices ranging from $1.75 to $1.90; and those were figured on certain lights, and still didn't get the business.

Q. Did Nash have its glass supplied through a body builder?

A. Our records indicate that our salesman called on both Nash and Seaman Body, whom we understand do a lot of work for Nash; whether exclusively or not, I don't know.

Q. How about Hudson? Do they do their own body building, or are their bodies built through a body builder?

A. I think they do their own. They get their windshields —some of their windshields, at any rate—through the manufacturers. A great many cars do that.

Q. You don't know which one?

A. No. It probably would vary at different times. I think Ainsworth have done some at times; probably Motor Products.

Q. How about Chrysler? Do they buy their bodies or build them?

A. I think some they buy. I have known a lot they buy from Fisher, because in 1927 we shipped a lot of glass to Fisher, and billed Fisher for Chrysler cars he was making.

Q. Do Studebaker and Pierce-Arrow build their own bodies or buy through body manufacturers?

A. I would say Studebaker would build their own; Pierce-Arrow may build some of their own, but all the high-priced cars you will find will buy some of their high-priced bodies.

Q. I think it has been already testified all of the Cadillac and LaSalle work was done through Fisher and Fleetwood?

[fol. 243] A. Yes, they are both subsidiaries of General Motors.

Q. Were these Tables "B" and "C" quoted to other manufacturers and body builders than the ones we have mentioned here, namely, Cadillac, Stutz, Studebaker, Pierce-Arrow, Chrysler, Hudson and Nash?

A. Yes, anybody that we knew of that we thought might be interested in laminated glass, or be induced to buy it. There are a number of small ones that were quoted.

Q. Coming down to the business done with distributors and jobbers, you have testified, I think, that during 1927 all that business was done at the figure of $4.80 a foot for

plate, and $3.60 a foot for sheet. Did you ever make any change from those prices?

A. Yes, sir.

Q. Will you state the times at which you made the changes, and what the changes were?

A. The original discount to the distributors and jobbers had been 40 per cent. from the list, the list being $8 and $6 respectively for plate and sheet. In March, 1928, we felt the sheet price was out of line, and we made the list on that $4 and increased our distributors' discounts to 50 per cent., making the net price to them $4 and $2 respectively, for finished lights—that is, lights finished to pattern.

Q. I understand that was a voluntary reduction on the part of the Triplex Company?

A. Yes, sir.

Q. Were there any subsequent reductions in the prices to distributors?

A. The next change that was made was to establish what we termed a block size price. In about the middle of 1928 we developed a process whereby the distributor or his dealer could cut and finish the light in the field from a rectangle corresponding to the rectangles in which raw glass is sold, and it was, of course, a big incentive to the [fol. 244] distributor not to have to carry a great number of different size lights. He could carry a smaller inventory and not be caught with obsolete stock. We made a price on that block size stock $3.50 on plate and $1.75 on sheet. That was our own; a price which we established when we developed the process.

Q. That was not forced by competition either?

A. No.

Q. Were there any changes from those prices?

A. There have been a great many changes from those.

Q. Take the first change that occurred.

A. November, 1928, we cut the price on the block size to $3 on the plate. We didn't change the price on the finished light, as we wanted to discourage the shipping of finished lights. January, 1929, we reduced our price on the finished light plate to $3.60.

Q. From what?

A. From $4 net. March, 1929, we reduced our block size plate to $2.25, and block size sheet to $1.40.

Q. Those were forced reductions?

A. Yes, sir.

Q. Any other change after that?

A. November, 1929, we reduced to $1.30 block size sheet quality. March, 1930, we cut our price on finished lights, plate quality, to $2.55 plate, and $1.75 finished lights sheet. At the same time, on block sizes, we reduced to $1.80 per square foot for plate and $1 per square foot for sheet.

Q. Those were forced reductions, both of them?

A. Yes, sir.

(Mr. Caulfield produces the Ford contract requested by Mr. Christy.)

Mr. Christy: Defendant's counsel asks that the copy of the contract with the Ford Company produced by the witness be marked for identification Defendant's Master's Exhibit "A."

[fol. 245] Q. Mr. Caulfield, have you your records here, or are you willing to state what prices you paid during the year 1928 for plate glass, when you purchased that plate glass from Pittsburgh Plate Glass Company?

A. I have no records here; but from memory I can state we paid their established market price, which at that time was 39 and 42 cents for the various size brackets we used most of. Those prices are referred to in the work papers that I worked out—39 and 42 cents per square foot of glass, in 1928, which was then established market.

Q. What was the 39 cents for?

A. As I recall it, it was for the size of glass known as the 2′ 8″ to 5′. That means a size between two feet and eight-twelfths and five feet.

Q. What was the 42-cent price for?

A. The 42-cent price was for the next largest size. I believe the 5′ to 7′ bracket.

Q. Those were the only brackets which you bought in 1928?

A. No, there were others; but those were the major ones. I would have to get my records to give you all of them.

Q. I wish you would at the next hearing produce an invoice from the Pittsburgh Plate Glass Company of each of the prices that you paid in 1928; and similarly an invoice of each of the prices that you paid in 1929; and similarly, of each of the prices that you paid in 1930.

A. There was no change in that period. There was a change in July of 1930, but that is subsequent to the accounting. However, I will bring invoices for each of those periods.

Q. Have you any records here from which you can state what prices you paid to the du Pont Viscoloid Company for pyralin during the year 1928?

A. I have no records here.

[fol. 246] Q. Do your work papers show that?

A. No.

Q. Will you please produce any invoices in the year 1928 showing the prices you paid to du Pont Viscoloid Company for pyralin; and similarly, invoices for the year 1929, and the first five months of 1930?

A. Yes, sir.

Cross-examination.

By Mr. Christy:

Q. Referring to this Ford contract, Mr. Caulfield, in paragraph 6: "The Ford Company agrees to pay the Triplex Company for laminated glass furnished by Triplex to Ford Company, at the cost of production to either the Ford Company or Triplex Company, at the option of the Ford Company, plus twenty cents for each Ford windshield, etc." In making up the cost of production to your company on these windshields or other glass included in that contract, what items did you include in your cost of production?

A. Labor, material, overhead.

Q. Can't you be more specific?

A. Yes, sir. The contract, you will note, in another clause, provides for accounting methods similar to the accounting methods pursued by the Ford Motor Company, and in that they take—they have a classification of direct labor; they have various classifications of overhead expense, such as water, power, light, heat, miscellaneous supplies, and such items as are generally considered expense. They also add the material cost.

Q. Did you include in your cost of production losses by shrinkage or breakage in process of manufacture?

A. Yes, sir.

Q. And you also, included, did you not, incidental or casual breakage of sheet glass stock before processing?

[fol. 247] A. If there were breakage, that would be included in the total cost of doing business with Ford.

Q. How did you handle these returns, if there were any returns?

A. There were no returns. They put inspectors in our plant, and accepted it f. o. b. our plant. I say there were no returns. There might have been a few, but the policy was f. o. b. our plant, and they have about seven men down there who inspect and accept.

Q. And I suppose any product rejected by these inspectors you simply wiped off and didn't carry in your inventories. Is that correct?

A. We wiped off by including in our charge to Ford the cost of that reject, less any salvage that might be obtained from it.

Q. That is, the cost of manufacture of the rejected material?

A. The Ford Company gave us orders to cut any windshields that might be rejected into wings for them, and we cut them into windshield wings without charging them for any material—just the labor and the overhead on that operation, and a profit.

Q. But the cost of manufacture of the rejects, when there were any, went into the cost of manufacture of the full product delivered to Ford?

A. It was all included in the price we charged them; yes, sir.

C. L. McHenry, recalled, testified as follows:

Direct examination.

By Mr. O'Shea:

Q. You have produced the lease between the Pittsburgh Plate Glass Company and the Pittsburgh Safety Glass Company for the lease of the property on which the Pittsburgh Plate Glass Company's building is built?

[fol. 248] A. Yes, sir; this is a duplicate.

Q. That is a true duplicate, as I understand?

A. Yes, sir.

Mr. O'Shea: I offer the lease in evidence as Plaintiff's Master's Exhibit 20. There has also been produced here an agreement between the du Pont Viscoloid Company and Pittsburgh Plate Glass Company, dated December 14, 1927. I offer that in evidence as Plaintiff's Master's Exhibit No. 21.

Mr. Christy: I think I am entitled to a statement of the purpose of this offer.

Mr. O'Shea: The purpose of the offer is to show the close connection between the Pittsburgh Plate Glass Company and the Duplate Corporation, on the one hand, and between the du Pont Corporation and the Duplate Corporation on the other hand. The contract, in my opinion, states in specific words that the du Pont Corporation and the Pittsburgh Plate Glass Company entered into a joint venture to run the Duplate Corporation. That is my purpose, and in addition thereto, a clause which indicates that each of the contracting companies agrees together that the corporation to be formed would purchase exclusively its raw material from each of the contracting parties. I should use it in argument, on the theory the Duplate Corporation was not a free agent in buying from each of its sources of supply.

Mr. Christy: I believe that the latter fact just stated by counsel was stated by Mr. Wherrett yesterday in his testimony. The relation between the du Pont Company and the Pittsburgh Plate Glass Company and the Duplate Corporation has already fully testified to, so far as it has to do [fol. 249] with this case. The offer is objected to as merely cumulative, consequently immaterial, and otherwise dealing with matters entirely outside the scope of this inquiry.

The Master: The exhibits will be received for the present. Exceptions noted to defendant.

Q. In Plaintiff's Master's Exhibit 6-"A," the date appears to have been written in pencil. Do you know whether that is the true date?

A. This copy was made at our Creighton office, and I would see no reason why that should not have the correct date on.

Q. So far as you know, that "1928" is the correct date?

A. Yes.

(Adjourned until Wednesday, May 20, 1931, at 10 o'clock A. M.)

Wednesday, May 20, 1931, 10 o'clock A. M.

GEORGE E. SHARPE, recalled, testified as follows:

Cross-examination.

By Mr. Christy:

Q. Your firm of Lybrand Ross Bros. & Montgomery is one of high standing in your profession, is it not?

A. Considered so; yes, sir.

Q. Both in this country and internationally?

A. Yes, sir.

Q. And one or more of the members of your firm have published books dealing with methods and practices of accounting, and pointing out methods considered proper to be followed. Is that not so?

A. Yes, sir.

[fol. 250] Q. Will you give me the more prominent publications by members of your firm on that subject?

A. One of the members of our firm, Robert Montgomery, has published several books on accounting theory and practice, which are considered a standard.

Q. Please name the books.

A. "Accounting Theory and Practice," I think is the name of the title of it.

Q. Do you consider the principles discussed and set forth in that book, as approved by the author, to be correct and authoritative?

A. Generally, yes.

Q. You wouldn't say that there is anything radically wrong with the book, would you?

A. No, sir; but it is a matter of his opinion.

Q. You do not now think of anything said by Mr. Montgomery in that book with which you do not agree, do you?

A. I can't think of anything, but there may be some things in there with which I don't agree.

Q. You say at the outset of your summarized report, which has been put in evidence in this case, that the purpose of your work was to amplify and expand the account filed by the defendant in this case. Was that the only purpose?

A. Generally, yes.

Q. For purposes of discussion, I will select a line on page 13 of your general statement for December, 1929. Please

take the red figure in the first column, amounting to $20,737.33. Please state what it is and how you arrived at it.

A. The figure of $20,737.33 represents loss on glass sales for the month of December, before elimination of contested items of cost and expense. The manner of arriving at this figure is shown on our income account in December, 1929, statements, page 7.

[fol. 251] Q. Now, on page 7 of your income account for December, 1929, you have total gross sales, net of allowances and adjustments, $152,104.53. Where did you get that figure?

A. From the records of the Duplate Corporation.

Q. Will you point it out?

A. We have prepared a reconcilement of the gross sales, as shown by the Duplate Corporation's monthly statements with the gross sales as shown on each of our monthly income accounts, but I don't happen to have this reconcilement with me at the moment. I can get it.

Q. Will you kindly send for your papers and be prepared to answer this and other questions on the same line?

A. I will.

(Recess taken to enable witness to produce papers.)

The Witness: The total sales, as shown by the Duplate Corporation's monthly statement, marked Exhibit 18 for identification, amount to $152,787.39. The allowances, as shown by the same statement, total $1135.15, leaving a gross sales net of allowances amounting to $151,652.24. To this figure we have added $1615.97, representing cash discounts allowed to the Pittsburgh Plate Glass Company, the amount of which discounts is shown below as an expense on our income account; and from the total an amount of $1163.58 is deducted, which represents price adjustments shown in the Duplate records of January, 1930, which were applicable to December 1929 sales, and which we have applied thereto. The remaining figure of $152,104.53, as explained above, is in agreement with the amount of gross sales net of allowances and adjustments, as shown on our income account for December, 1929.

[fol. 252] Q. Did the Duplate Corporation actually receive the sum of $1615.97, which you have deducted for cash discount on sales, as stated by you?

A. No; the Duplate Corporation paid this amount to the Pittsburgh Plate Glass Company, and on their statement

it is taken as a deduction from sales; whereas, on our statement we have considered it as an item of expense.

Q. Did the Duplate Corporation actually receive that sum and then pay it to the Pittsburgh Plate Glass Company?

A. This amount was credited—the net result of the transaction was a credit to the Pittsburgh Plate Glass Company, and I assume that they received it.

Q. Why do you assume that they received it? Is there anything on the books to show that they received it?

A. As I understand it, the Duplate Corporation's account with the Pittsburgh Plate Glass Company contained various credits which were not specifically paid, and therefore I can't say whether this item was specifically paid to the Pittsburgh Plate Glass Company. As a matter of fact, the Pittsburgh Plate Glass Company, according to the Duplate Corporation's manner of keeping records, would be charged with the gross sales net of the cash discounts.

Q. In point of fact, did this sum of $1615.97 represent any part of the revenue actually received by the Duplate Corporation from its sales in the month of December, 1929, or at any time?

A. I will answer that question this way——

Q. Well, please answer it yes or no, and then explain, as you may think best.

A. Yes.

Q. Now, as to cost of gross sales on the sheet, page 7 of your statement for December, 1929, amounting to $139,536.44. Where did you get that figure?

[fol. 253] A. From the records of the Duplate Corporation.

Q. Will you please explain just how you made the computation?

A. Cost of Duplate sales, $120,394.01 plus the cost of sheet glass and other specialty sales, $7433.85, plus loss in stock Duplate, $11,708.58.

Q. And that, as shown on your statement on page 7 of your income account of December, 1929, shows an apparent profit of $12,568.09. Is that correct?

A. Down to that point that is correct.

Q. Now, please explain the modifications which you have made in that showing on your income account of December, 1929?

A. Which modification?

Q. Explain how, starting with this apparent profit of $12,568.09, you arrive at an apparent loss, as shown on page 13 of your summary for December, 1929, of $20,737.33?

A. The difference arises through expenses, as listed on our income account, and which total $33,305.42.

Q. That is, you subtract the footing of $12,568.09 from the sum of the column immediately beneath, amounting to $33,305.42, leaving you the figure stated as a loss of $20,737.33. Is that right?

A. Yes.

Q. Now, in the second column on page 13 of your summary for December, 1929, you show a figure of $31,471.80, entitled "Total of contested items of cost and expense eliminated." Where does that figure appear in your explanatory statement for December, 1929?

A. The detail of the first item, amounting to $22,834.76, which represents contested items of cost eliminated, is found on page 9 of our statements for December, 1929.

[fol. 254] Q. And the balance is set forth in the second column on page 7 of your income account for December, 1929. Is that right?

A. Yes; the balance totaling $8637.04.

Q. Now, referring further to the figures on page 13 of your summary, in the line December, 1929, the third column on that line, the figure of $10,734.47 represents the sum obtained by subtracting from the total items which you have eliminated, amounting to $31,471.80, the apparent loss of $20,737.33, as to which you have already testified. Is that correct?

A. Yes, sir.

Q. Now, what further adjustment is represented by the figure in the fourth column on that line, $11,440.91?

A. As stated in the heading, that figure, $11,440.91, represents the aggregate profits net of losses, as shown on schedule of sales, page 5. The column next to the last on that page, captioned "Profits," $15,238.65, less the total in the last column, captioned "Losses," $3797.74.

Q. Now, what connection is there between the figures shown on the December, 1929, line on page 3 of your general statement with the figures shown on the December, 1929, line on page 15 of your general statement?

A. The amount in the first column, $15,238.65, represents the aggregate profits on individual sales, as shown on page

5 of the December, 1929, statements, from which we have deducted $850.18, which represents credits which were not allocated to particular sales, and which we have included on the monthly schedule of sales under column captioned "Losses," which represents the last two items in that column, captioned "Losses," and we have also deducted the amount of $5141.27, which represents the total credits to customers for returned sales net of cost of returned sales, [fol. 255] as shown on the December, 1929, income account, page 7, leaving a balance of $9247.20, as shown under column "D," for December, 1929, on page 15 of our report.

Q. Just where do I find on page 7 of your detailed statement for December, 1929, the item of $5141.27, being the third figure on the December, 1929, line, on page 15, of what I have called your general statement or summary?

A. That item does not appear specifically, but represents the difference between $40,991.47, called returned sales, and the item of $35,850.20, called cost of returned sales.

Q. Now, generally speaking, your testimony regarding these December, 1929, items, on pages 13 and 15 of your summary, applies equally well to explain the connection between the items on the other lines for other months during the accounting period, in the other monthly statements which you have submitted. Is that so?

A. Yes, sir.

Q. Now, in obtaining the figure of $5141.27, in the third column on the December, 1929, line, on page 15 of your summary, by subtracting (as shown on page 7 of your December statement) from returned sales, $40,991.47, the cost of returned sales, $35,850.20, state the reason why you allow to the defendant under reduction of gross profits only this figure of $5000, instead of the actual figure of returned sales, amounting to $40,000?

A. Because that was an item which was to be contested, we understood, by the counsel for the plaintiff.

Q. And the effect of this is to assume the inclusion in the defendant's assets of the sum of $35,850.20, which you call "cost of returned sales." Is that correct?

[fol. 256] A. No, sir.

Q. Why not?

A. The item of $35,850.20 does not have any connection with defendant corporation's assets, as I see it.

Q. Where does this item of $35,850.20 appear in your summary of the profit and loss account of the defendant company?

A. It appears as part of the $40,991.47 credited to customers during the month of December for returned sales.

Q. If your firm was engaged by the defendant company to examine its books and give it a statement of its financial condition, what would you do with this item of $35,850.20?

Mr. O'Shea: I would like to take an exception, on the ground that testimony called for by this question is immaterial and irrelevant.

The Master: The objection is overruled. Exception noted to plaintiff.

A. I would call it to their attention as representing the cost of glass previously shipped to customers, which was found by customers to be defective or not coming up to the standards which they had ordered, and which I think that defendant corporation, if our clients, should need to know.

Q. Would you advise putting it in an inventory account as an asset?

A. As I stated before, it is no asset.

Q. What would you do with it, if you were preparing a statement of account for the Internal Revenue officers for the purpose of computing defendant's income tax?

Mr. O'Shea: Same objection.

The Master: Objection overruled. Exception noted to the plaintiff.

[fol. 257] A. On the Federal income tax statement it undoubtedly should be considered an item of loss, but it represents an item of loss, representing the cost of glass returned by reason of its being defective.

Q. Now, if the Master and the Court should decide that this loss of $35,850.20, stated by you as of the month of December, 1929, is properly chargeable as an expense against the revenues derived from sales, then the figure of $5141.27 in the third column on the December, 1929, line, page 15 of your summary, would be changed to $40,991.47, would it not?

Mr. O'Shea: Objected to as calling for a conclusion.

The Master: Objection overruled. Exception noted to the plaintiff.

A. Not to be included under the caption as stated at the head of the column.

Q. Well, whatever you have been pleased to call what is shown in that column, the effect would be to change the last figure in the 1929 December line from a black figure of $9247.20 to a red figure representing the difference between $9247.20 and $35,850.20?

A. If the Master and the Court should so decide, that would be a fact.

(Recess until 3:00 o'clock P. M.)

[fol. 258] Afternoon Session

GEORGE E. SHARPE, resumes the stand.

Cross-examination (continued).

By Mr. Christy:

Q. In referring to defective goods returned, I have referred more particularly to the fourth item in the December line, on page 15 of your summarized statement. If the Master and the Court should decide that the cost of manufacture of these returned defectives should be deducted from the revenue derived by the defendant from its sales, would not that also affect the figure of $15,238.65, the first one in the December, 1929, line, on page 15 of the summary.

Mr. O'Shea: Same objection.

The Master: Objection overruled. Exception noted to the plaintiff.

A. It undoubtedly would affect that amount but we don't know how much.

Q. In other words, referring to page 5 of your detailed statement for December, 1929, you have calculated the profits shown in the next to the last column of $15,238.65 on gross sales of 88,147 square feet, have you not?

A. Yes, sir.

Q. Can you tell me what was the feetage of returned defectives in that month?

A. It is shown on our income account, page 7—21,988 feet, 6 inches.

Q. And that is shown in detail on page 6 also, is it?

A. Yes.

Q. And why would it not be possible to make the computation under the assumption which I have made, and state what the result would be in the column represented by your figure of $15,238.65?

[fol. 259] A. It would be possible; it could be done.

Q. Well, will you please make the computation?

A. To make that computation would result in an increased cost per foot, which increased cost per foot would be applied to each individual sale as a separate profit or loss making sale, which would require some time to do.

Q. It would substantially reduce this figure of $15,238.65, would it not?

A. I assume that it might.

Q. Well, wouldn't it?

A. I think it would. I don't know how much, but it would.

Q. We will pass that point, because it would take considerable time to figure it out, as you say. I will ask you to return to the fourth column on page 15, and assuming that the Master and the Court should decide, as already assumed, that the cost of these returned defectives should be deducted from the defendant's receipts from sales, make the requisite changes in the showing in this fourth column on page 15, leaving the figures in the first column as they are.

Mr. O'Shea: Same objection.

The Master: Objection overruled. Exception noted to the plaintiff.

A. It can't be done without changing the figures in the first column.

Q. Can you not treat it just as you admitted would be the effect upon the fourth figure in the December 1929 line? That is, treat all the other figures the same way and give the results of your computation.

A. I believe that I stated that if $35,850.20 were deducted from $9,247.20 that there would be a considerable loss, which would be shown in red.

Q. And that would be how much?

[fol. 260] A. I can't determine that until the first figure is adjusted for us.

Q. Well, please deduct $9,247.20 from $35,850.20, and give the result?

A. $26,603.

Q. And that, under the assumption, would be shown in red where we have the figure of $9,247.20, on page 15 of your summary?

A. Providing the heading of that column were changed; because the $26,603 would not be net profit on profit-making sales, under columns "B" and "C", but would merely be the difference between two figures.

Q. And that, as you say, would not be an accurate showing, because it would take no account of the necessary adjustment of the figure in the first column on that page?

A. That is right.

Q. I have asked you to make the computation, confining it only to the fourth column, and leaving out of consideration any change which would be made in the first column. You do not seem to be willing to do this. Therefore, much against my inclination, I am compelled to ask you to make the necessary adjustment in the first column, assuming that the Master and the Court shall have decided that the cost of returned defectives shall be deducted from defendant's receipts from sales.

Mr. O'Shea: I object to that; first, because that computation ought not to be made at our expense; second, because it is immaterial and irrelevant; and third, because it means a recomputation of this entire account; and fourth, because the question calls for a conclusion, in that it assumes that the Master and the Court will decide the question inquired [fol. 261] about in a particular way. If the eventuality of the assumption happens, and the Master does hold that the returned sales are a proper charge against this plaintiff, in that event I assume that he will then call upon the parties to recompute in accordance with that decision.

Mr. Christy: I will withdraw the request for the present.

Q. Please refer to November 1929 line, on page 15 of your summarized statement, and state how you obtain the figure of $50,541.78, the first figure on that line?

A. That is the aggregate in our calculations of profits on individual sales, as shown at the bottom of page 6 in the November 1929 statements.

Q. And where, if at all, does that figure enter into your income account on page 8 of your November 1929 statements?

A. The difference between $50,541.78, as shown at the foot of page 6, under the column captioned "Profits",

minus the total, $3,786.97, shown as total under the column "Losses", leaves a net $46,754.81. Referring to our income account for November, 1929, page 8, profit on gross sales, as shown under the column captioned "Total", amounts to $13,145.13. Contested items of cost and expense to that point included in the next column, total $33,536.94. The sum of these two items equals $46,682.07. The difference of $72.74 arises through dropping of decimals in calculating our profits or losses on individual sales. A slight difference occurred in practically every month. The item of $72.74 appears on page 13, in November, 1929. It also explains the relation the same way as I have stated.

Q. Then referring to the third figure in the November 1929 line, on page 15 of your summary, namely $7,950.35, that represents the difference between the returned sales [fol. 262] item of $38,934.22 and what you call cost of returned sales, amounting to $30,983.87, as shown on your income account, page 8, November 1929. Is that correct?

A. That is correct.

Q. Then disregarding any adjustment of the first figure on the November 1929 line, if the Master and the Court should find, as before assumed, that the cost of the returned defectives should be deducted from defendant's receipts from sales, the figure of $30,983.87 should be subtracted from the fo th figure in the November 1929 line, namely, $41,616.95. Is that correct?

Mr. O'Shea: Objected to.

The Master: Objection overruled. Exception noted to the plaintiff.

A. That is not correct.

Q. Why not?

A. For the same reasons as discussed in answering the same question for December, 1929. It is exactly the same question.

Q. That is, just because my question would slightly change the total of that first column, as you have said. Is that accurate?

A. So far as deducting the $30,983.87 from the $41,616.95, it can be done, but I wouldn't know what to call it. What could it be called? I don't know, because, as stated before, it is based on the figure on the first column, $50,541.78.

Q. In other words, unless the assumption under which you undertake to make your statement of profits is correct,

in respect of the manner in which you have handled the matter of returned defectives, your profit figures would have to be completely recomputed and recast. Is that right?

[fol. 263] A. That is right.

Q. Now, in this income account of November, 1929, you have included in the column headed "Contested Items of Cost and Expense," the sum of $6,660.17, entitled "Commissions Paid to Pittsburgh Plate Glass Company." Is that correct?

A. Yes, sir.

Q. And the consequence of the inclusion of that figure in that column on your income account has been to include it in your ultimate showing of profits, has it not?

A. The result has been to eliminate from the cost and expenses that amount along with others stated, thereby decreasing the costs and expenses, and decreasing the average cost per foot.

Q. (Question read.)

A. Yes, sir.

Q. Did the defendant ever receive that sum?

A. No, the defendant never received that sum as commissions.

Q. Did it receive it as the price paid it for products sold?

A. The defendant corporation didn't receive commissions from the Pittsburgh Plate Glass Company.

Q. (Question read.)

A. To whom?

Q. Anybody—any purchaser.

A. Yes.

Q. Will you find it?

A. It is probably included in the gross sales of $270,747.90.

Q. I suppose in reaching this figure of $270,747.90, you took it from original sources, did you?

A. Yes, sir. That is, the sales, as shown by the Duplate records—gross sales.

Q. And paid to the defendant?

A. I assume it was paid to the defendant.

[fol. 264] Q. I am not asking you to assume. I am asking you for the fact. Was it paid to the defendant?

A. If they were able to collect it all. I assume that they were able to collect it all, because it was billed to the Pittsburgh Plate Glass Company.

Q. I am not asking about the Pittsburgh Plate Glass Company. I am asking about this defendant. The Pittsburgh Plate Glass Company has nothing to do with it.

A. They were billed for the sales—their customers. The fact whether or not they collected the $270,747.90 depends on whether the Pittsburgh Plate Glass Company paid for that glass.

Q. Well, here is Master's Exhibit No. 2, being an invoice to the Fleetwood Body Corporation, in the amount of $52.39, which I believe was a bill rendered by the Pittsburgh Plate Glass Company to that purchaser. On the back of the exhibit there is stamped the legend, "Pittsburgh Safety Glass Company to charge Pittsburgh Plate Glass Company as follows:—Total amount of invoice, less 3%". Did the Pittsburgh Plate Glass Company pay the Duplate Corporation the sum of $52.39, or the sum of $52.39, less 3 per cent?

A. According to the records at the Duplate Corporation, Pittsburgh Plate Glass Company paid the Duplate Corporation $52.39 in that particular instance.

Q. Will you show me that record, or a copy of it?

A. That particular invoice would be included with other so-called invoices for the month of November, recapped, and a monthly bill to Pittsburgh Plate Glass Company prepared. This monthly invoice would also show the commissions.

Mr. O'Shea: It is admitted that the Duplate Corporation did not receive in the month of November, or at any other time, the sum of $6,660.17, which is listed on the [fol. 265] month of November 1929 income account as commissions paid to Pittsburgh Plate Glass Company.

Q. Will you repeat what you said this morning as to the item "Cash Discount on Sales, $1615.97," shown on your income account for December 1929? I have forgotten just what you said on that.

A. I think that question arose in explaining to you the reconcilement of our gross sales figure to the gross sales figure that showed in their statement.

Q. Possibly. I don't know.

A. That $1615.97 is handled as cash discounts to Pittsburgh Plate Glass Company, considered in their statement as deduction from sales; considered in our statement of income account as an expense.

Q. What I want to get at is, if you will excuse me for not being clear on the point, did you include that in your cost of sales, or did you exclude it?

A. It is included as one of the items making up the cost of sales.

Q. Now, this morning you said of the item of $22,834.76 at the top of the second column on your income account of December 1929, under the heading, "Contested Items of Cost and Expense", that this was excluded from cost of sales as given by you. Is that correct?

A. Yes, sir, that is right.

Q. And that the details were given on page 9 of this December 1929 statement?

A. Yes, sir.

Q. Now, the first item on page 9 is called "Cutting Department Shrinkage Loss." What does that mean?

A. I don't know what it means, but it was just as stated on the company's Schedules "J" for that month.

[fol. 266] Q. Just to suggest—if the cutter should accidentally break a sheet of glass while manipulating his instrument over it, would you classify that as a shrinkage loss in the cutting department?

A. I don't know.

Q. How would you classify it, as an accountant?

A. Would probably classify it as a cutting loss or shrinkage loss, or some other term that might explain it.

Q. As an accountant, would you consider such a loss to be a part of the normal cost of production of the plant?

Mr. O'Shea: Objected to as calling for a conclusion.

The Master: Objection overruled. Exception noted to the plaintiff.

A. Not being familiar with the manufacturing processes of the safety glass business, I couldn't say.

Q. What manufacturing operations have you examined for purposes of cost accounting?

A. Varied lists of manufacturing companies.

Q. Have you ever examined the accounts of a plant for the manufacture of steel?

A. Yes, sir. Some kinds of steel, yes.

Q. Suppose that in tapping the steel from a furnace into the ladle, the workman should accidentally tip over a ladle full of steel, would you classify that as part of the cost of manufacturing the steel in that plant?

A. I would, if it didn't represent an exceptionally large percentage, and I believe that it would be up to experts in that manufacturing line to determine what is a normal loss and what is not.

Q. Well, there are some losses in operation always which you would call normal losses, aren't there?

A. Yes, sir; I should think so.

[fol. 267] Q. Would you expect a great many of these to be shown on your page 9?

A. Probably a portion might be considered normal losses.

Q. And to that extent, as an accountant, do you consider it proper to exclude from cost of manufacture all the items included in this figure of $22,834.76, shown on page 9 of your December, 1929, statement?

A. For the purpose of this account, I would say yes.

Q. What was the purpose of this account?

A. To furnish the counsel for plaintiff with the information that he wanted.

Q. Now, return to my last question. Assuming that normal losses in manufacture are included in this twenty-two-thousand-dollar item, would you, as an accountant, consider it proper to deduct the entire item from the cost of manufacture?

A. Not the entire item.

Q. On sheet 4 of your December, 1929, account, you have figured the profits and losses by deducting from the gross sales a computed cost, which you say is based upon averages per foot shown on income account. Is that correct?

A. That is right.

Q. And that cost was what? And just where is it shown on the income account?

A. The costs, as shown on the income account, are $1.63 plus, for Duplate; $7.24 plus, for bullet-proof; $1.00 for sheet; $2.23 plus for photo and picture; and 28 cents plus for combinations.

Q. We will confine ourselves to the average cost per foot for Duplate of $1.63 plus. How did you reach that?

A. Let us take the first item, 290 feet 3 inches, which is Duplate, on page 4. Calculated at a cost of $1.63 plus,

gives us the cost on that particular sale of $473.11. The [fol. 268] amount of that individual sale was $290.25, as is shown on there, resulting in a net loss on that particular sale of $182.86.

Q. And that same method was followed throughout your sheet 4?

A. Yes, sir; and all the other sheets that were the same.

Q. How did you reach this average cost figure of $1.63 plus?

A. Referring to the income account, page 7, the cost of gross sales for Duplate shown on the third column, amounting to $109,267.83, plus $22,684.21, shown further down in that column, representing the expenses, gives the total of $131,952.04. By dividing that by 80,932 feet 3 inches, shown above as gross sales of Duplate, will give an average of $1.63 plus.

Q. On sheet 4 of this December statement, I find it stated that the selling price of Duplate ranged all the way from $1 to $3 per square foot. According to your method of computation, it would make no difference as regards your computed cost of sales whether out of that 80,000 square feet of glass sold, 79,000 square feet were sold at $3 per square foot, and 1000 square feet at $1 per square foot; or whether 79,000 square feet were sold at $1 per square foot, and 1000 square feet sold at $3 per square foot. Is that correct?

A. It would make no difference; that is correct.

Q. Is that a rational way of stating an account?

A. Under the circumstances, yes.

Q. What circumstances?

A. The circumstances were that the Duplate Corporation kept their costs, or calculated their costs, on one item. They made no segregation of the costs of different grades of Duplate, if there were any, and we couldn't segregate the costs. If there was any difference as to the cost of glass they sold for $1 a foot or cost of glass they sold for $3 a foot.

[fol. 269] Q. Then if that is your theory, wouldn't it follow, in order to compute profits, you would have to take average selling price instead of individual sales, to be consistent?

A. No, I would say.

Q. I don't understand what you say; if I understood you right that the Duplate Corporation figured its costs—

that is, what you call cost of sales—at an average cost per square foot. Is that shown on this statement that was submitted to the Master?

A. Which statement do you mean?

Q. The one that is in evidence here, offered by the plaintiff.

A. Those various items of cost are charged to cost of Duplate, sheet, and so forth, without any segregation as to grades of Duplate or grades of any class.

Q. But no factor to represent an average cost of production is used, is it?

A. It is on their Schedules "J."

Q. Schedules "J" are not in evidence. I am talking about this account which is before the Master. Please answer the question.

Mr. O'Shea: Schedule "J" is in evidence. It was marked for identification.

Mr. Christy: It was marked for identification but not put in evidence.

A. It is not shown on there (referring to defendant's statement). They don't show any detail of their cost records on their account which they furnished the Court.

Q. Well, this account which the defendant furnished the Court does show the aggregate sales and the aggregate costs and the difference representing either profit or loss, does it not?

A. Yes, sir.

(Adjourned until Tuesday, May 21, 1931, at 10 o'clock A. M.)

[fol. 270] Thursday, May 21, 1931, at 10 o'clock A. M.

GEORGE E. SHARPE, resumes the stand.

Cross-examination (continued).

By Mr. Christy:

Q. Please refer to your December, 1929, schedule of sales, and state the feetage of sales of Duplate for that month. That is, excluding laminated sheet glass, bullet-proof glass, and whatever specialties there may be.

A. You will have to wait until I go through and add them up, because they won't agree exactly with the income account. According to the schedules of gross sales, the total number of feet of Duplate sold during the month of December, 1929, total 80,958 feet, and a total of sheet and other specialties amounted to, in feet, 7188 feet 8 inches.

Q. Now, will you please give me the total square feet of Duplate, understanding that term as in my last question, which you find was sold at a loss in the month of December, 1929?

A. In answer to your question as to the number of feet of Duplate sold at a loss, according to our schedule of gross sales for December, 1929, I will say that they aggregate 26,612 feet and 6 inches.

Q. Referring to the first leaf of your schedule of sales for the year December, 1929, I call your attention to the item sold to the Seaman Body Corporation, a total of 21,503 square feet 5 inches, at a selling price given by you of $2 per square foot, which you have split up so that it shows a loss of about $1700 on about 17,000 square feet, and a profit slightly less than $1700 on the balance of about 4500 square feet.

A. Under the column headed "Gross Sales, Pittsburgh Plate Glass Company to Customers," on page 1 of [fol. 271] December, 1929, statements, we show shipments to Seaman Body Corporation totaling 21,503 feet 5 inches, at the total gross billing of $43,020.90, giving an average rate per square foot of $2 plus. These figures were compiled from copies of the invoices examined. It seems to have been the policy of the defendant corporation in months subsequent to shipments, to grant credits to several corporations to whom they shipped glass, which they called "price adjustments." So far as were able, we have applied these credits for price adjustments or rebates back to the months the glass was originally shipped. We have identified credit memoranda issued to Seaman Body Corporation on 2442 feet, on which the Duplate Corporation has granted price adjustments of 90 cents a foot, on shipments of glass made during December, 1929. We have extended into our column captioned "Sales, Net of Allowances and Adjustments, but before returns, Pittsburgh Plate Glass Company to Customers," that portion of shipments to Seaman Body Corporation which were shipped

at a net selling price of $1.10 plus; thus resulting in a loss of $1281.96. Likewise, we found credit memoranda granting credit to Seaman Body Corporation of 40 cents, and which is on 14,623 feet 11 inches, shipped during the month of December, 1929, which reduced the actual net selling price of that portion from $2 plus per foot to $1.60 plus per foot, thus resulting in loss in sales on that glass of $428.49. Because of the fact that we could not specifically identify credit memoranda for price adjustment for any more than the 2442 feet and 14,623 feet 11 inches, we have assumed that the 4457 feet 6 inches was sold at a price of $2 plus per foot, thus resulting in a profit of $1651.40.

Q. I have looked through this schedule of sales for December, 1929, which is in your detailed statement for that month, for the sales made, particularly of Duplate at very low prices. There are some sales as low as $1 per [fol. 272] square foot. No one of them is identified by a purchaser except one so-called sale of one square foot, eight inches. Reminding you that I believe you have stated that in some cases the defendant was able to dispose of some rejectments, would you not think it likely that these one dollar per square foot sales were mainly rejectments which had been cut and sent out?

A. No, sir.

Q. Why not?

A. Because I don't believe that the determination of selling price was based on costs.

Q. You mean in those particular cases or in any case?

A. Generally. I am speaking about the selling prices per foot, as shown on here. I am not referring to any special $1 per foot bracket—generally. My reason being that shipments to the Fisher Body Corporation, at a price of $1.75 a foot, was undoubtedly just as good glass, or maybe better, as glass that was shipped at $3 a foot. Therefore, I believe that the selling price per foot was not determined by actual cost records of producing that glass.

Q. In any particular case or cases to which you refer in your last answer, was not edge work billed to the Fisher Body Corporation separately?

A. It so happens that in this particular month, shipments to Fisher Body Corporation seem to be very small, but during months in which shipments to Fisher Body

run very high, I believe that the average additional billing per foot for edge work was not in excess of 13 or 14 cents a foot, which was considerably above cost at that time.

Q. Above cost of what?

A. Cost of edging.

Q. So that certainly the men who fixed these prices took this special work into consideration, did they not?

A. Edge work, you mean?

[fol. 273] Q. Yes. You have mentioned it—thirteen to fourteen cents.

A. Granting that $1.75 was probably the flat rate per foot for edge work, edge work possibly averaged fifteen cents a foot, which Mr. McHenry might verify offhand, making a total of $1.90 per foot of possibly the best glass that Duplate Corporation manufactured; whereas, shipments to other customers run as high as $2.50 or $3.00 a foot, according to this sales schedule in front of me.

Q. So you would say that the officers who fixed these selling prices really took no account of the different qualities of glass that went into the product and the different values?

A. That is my opinion.

Q. I have here a memorandum which shows for the same bracket in October, 1929, a price of fifty-five cents per square foot for silvering quality glass; a price of forty-five cents per square foot for the quality called mirror glazing, and the price of thirty-nine cents per square foot for the quality called glazing, which would make a difference, recalling that each sheet of Duplate contains two square feet of glass for each square foot of area, of thirty-two cents per square foot, between the higher of these three prices and the lowest. Do you think that the very experienced officers who figured the selling price of these products did not take into consideration these variations in cost of material? Or do you think that your own opinion, in a business which you have said you know nothing about, is better than theirs?

A. I believe that had the selling price of the Duplate product been based on cost, said cost to include losses and so forth, that the Duplate Corporation would not have shown such losses including losses in production and defective product, during the twenty-nine months' period.

[fol. 274] Mr. Christy: I object to the answer as utterly irresponsive.

Q. (Question read.)

Mr. O'Shea: I object to the question, on the ground that the best evidence of what the officers did here is their own testimony, and this testimony calls for a conclusion of this witness; and further, inasmuch as it has asked for his opinion, the answer does give an opinion.

The Master: We will admit for the time being both the question and the answer.

Q. I have here a memorandum which shows for the same bracket in October, 1929, a price of fifty-five cents per square foot for silvering quality glass; a price of forty-five cents per square foot for the quality called mirror glazing, and the price of thirty-nine cents per square foot for the quality called glazing, which would make a difference, recalling that each sheet of Duplate contains two square feet of glass for each square foot of area, of thirty-two cents per square foot between the higher of these three prices and the lower. Do you think that the very experienced officers who figured the selling price of these products did not take into consideration these variations in cost of material?

Mr. O'Shea: Same objection.

The Master: Objection overruled. Exception noted to the plaintiff.

A. I shall make the same answer as above, namely, I believe that had the selling price of the Duplate product been based on cost, said cost to include losses and so forth, that the Duplate Corporation would not have shown such losses, including losses in production and defective product, during the twenty-nine months' period.

[fol. 275] Q. Mr. Sharpe, if you will try to answer my questions fairly, we will get along better. Please have the question reread, and give me a rational answer to it.

Mr. O'Shea: I object to that question—the characterization of his answer. The question has asked for an opinion, and the witness has given an opinion.

Mr. Christy: I have left the opinion out. I have asked him a question, yes or no.

The Master: We will hear it.

Q. (Question read.)

A. Do you want a reply yes or no?

Q. If that is satisfactory to you.

A. If my previous reply is not satisfactory, I will say no, if you want an opinion.

Q. You referred to sales of Duplate at $3.00 per square foot. On your statement for December you show sales at that price of less than 100 square feet out of the total of over 80,000, do you not?

A. Approximately 100 square feet.

Q. On the second of your sheets of sales for December, 1929, second sale from the top of the page to Fisher Body Company, 675 square feet, priced at $1.00 per square foot by Duplate Corporation to Pittsburgh Plate Glass Company, and priced at $1.75 per square foot by Pittsburgh Plate Glass Company to customer. It is a small point, but I would like to have you verify that, or state whether it is a mistake?

A. The 675 square feet representing sales to Fisher Body at $1.00 per square foot included, under the caption "Gross Sales Duplate Corporation to Pittsburgh Plate Glass Company," is correct as listed. However, we refer you to page 9 of our summary report for an explanation of such differences as these.

Q. Referring to your summary, on pages 2 and 3, where you are reconciling the figures of the defendant's report [fol. 276] with your own, you included on one side an item of $70,000 plus for speciality sales for the five months ended May 31, 1930, and a charge against that of $63,000 plus, the whole being practically cancelled by other adjustments. You say that this $70,000, together with the corresponding charge, is not included in the Duplate account. Were you informed why it was not included?

A. Yes.

Q. Why?

A. We were informed by Mr. McHenry that the specialty sales and costs of specialty sales were not included in the account filed for the five months' period ending May 31, 1930, for the reason that part of the production was manufactured under the old process and part under the so-called new process. As it was not possible for us to determine what was the old and what was the new, we have

included the sales and costs of sales as per Duplate books. Since the defendant corporation, according to the account filed, admits a certain portion of old process speciality glass manufactured during this five months' period, and since we were unable to determine the correctness thereof, we have included all sales and costs of sales of specialty glass sold during that period.

Q. I only want to make a rough reconciliation between the two reports. Were you not informed that practically all of this $70,000 represented another product than that covered by this accounting?

A. Yes, Mr. McHenry told us that.

Q. Then it appears on page 2 of your summary that there is a difference of about $39,000 between the two accounts, and it also appears that an obvious mistake of $35,000 was made by the Duplate Corporation in computing interest on investment during the year 1928. With expected minor adjustments, the two accounts practically agree, do they not?

[fol. 277] A. Whatever is stated there on page 2. That is what it states, I suppose.

Q. That is the effect of this statement?

A. The profits and losses as shown by the monthly income accounts differ $39,238.67, which is aggregate losses shown by the account filed by the Duplate Corporation.

Q. What I want to bring out is, if you will concede as much as that, that they are practically reconciled by the adjustment for this inadvertent overcharge of interest on the investment?

A. I don't admit that. I do admit, however, that the total profits or loss per monthly income accounts, before the elimination of certain items of cost and expense, differ in aggregate in the amount of $39,238.67, with the total loss for the two years and five months, as shown by the account filed by the Duplate Corporation.

Q. Referring now to page 12 of your summary, you show a profit on individual sales, net of losses and miscellaneous credits of $1,751,217.38. Is that correct?

A. Yes, sir.

Q. And you show on the same page returned sales, $812,770.93. Would you say that under your instructions you have not included that as a part of the cost of obtaining this profit. Is that correct?

A. The item referred to, called "Returned Sales," amounting to $812,770.93, doesn't represent our calculations of the cost of returned sales, but represents the aggregate credits granted to customers for returned sales during the twenty-nine months' period, as shown by the Duplate's books.

Q. And that you have declined to allow as a credit to the defendant against the profits listed immediately above. Is that correct?

A. No sir. This is merely a reconcilement. We are reconciling the figure of $1,825,337.63 to a red figure of $977,395.53.

[fol. 278] Q. I understand that, and that is what I am trying to do in a rough way. Now, in addition to this credit which you refuse to allow, there were also commissions paid to the Pittsburgh Plate Glass Company, which you also refused to allow, of $220,715.28, were there not?

A. At the beginning of your question you mentioned "this credit which we did not allow." Which credit do you mean—$812,770.93?

Q. Yes, sir.

A. Of that amount, $812,770.93, we have excluded $631,280.83, which represents our calculation of the cost of returned sales over the twenty-nine months' period. We have excluded this amount, $631,280.83, in calculating our average cost per foot of glass sold. We have not excluded the $812,770.93.

Q. Now, answer my question, please. (Question read.)

A. Regarding the item of commissions paid to Pittsburgh Plate Glass Company during the twenty-nine months' period, we have eliminated from the cost of sales an aggregate of $220,742.95 during the twenty-nine months' period.

Q. Now, Mr. Sharpe, you may not have meant to do so, but it seems to me you are unnecessarily complicating matters. My question has had only to do with the showing on page 12 of your summary, where you give the total alleged profit of $1,700,000 plus. It did not have to do with the adjusted figures of $1,600,000 plus, on page 15. As shown on page 12, you have a profit figure of $1,751,217.38, and you have refused to allow as credits against that figure $812,000 plus and $220,000 plus, making an ag-

gregate of $1,033,000 plus. Is that not right, in round figures?

A. Are you referring to page 12? There has been a lot of things that we have eliminated.

Q. Please answer my question.

[fol. 279] A. We have not eliminated $812,770.93 from the cost of anything, or from the profits, because $812,770.93 was already deducted as returned sales by the defendant corporation on its records. Regarding the reconciliation on page 12, which I think is referred to, as stated there, that is what it is. I will explain clearly any item there, but that merely, as I said before, is a reconcilement of one figure with another.

Q. I was trying to simplify your own statements, but you will not have it that way. Now, take the statement on page 15. Mr. O'Shea has stated that he claims the footing of column 4 on that page, amounting to $1,614,665.33. What is the aggregate of the returns which you decline to allow to the defendant to be subtracted from that figure?

A. You say to be substracted from that figure?

Q. (Question read.)

A. There is none.

Mr. Christy: Manifestly the witness has reached a state of mind under which I am unable to cross-examine him further. Protesting against this attitude, I have nothing further to ask.

Mr. O'Shea: I object to any such statement on the record, as being wholly unjust to the witness.

The Master: The statement of Mr. Christy may remain, together with the statement of Mr. O'Shea.

Mr. O'Shea: The witness has been making a diligent effort to answer the questions clearly and intelligently.

(Recess until 1.30 o'clock P. M.)

[fol. 280] Afternoon Session

Mr. Christy: In support of one of my questions this morning, I produced what purports to be a copy of an invoice from Pitsburgh Plate Glass Company to Duplate Corporation, dated October, 1929, for supplies of plate glass, and request that it be marked for identification Defendant's Master's Exhibit "B". I will undertake to prove it in due course.

Mr. O'Shea: We admit Defendant's Master's Exhibit "B", as produced by Mr. Christy, is a true copy of an original bill from Pittsburgh Plate Glass Company to Duplate Corporation.

GEORGE E. SHARPE resumes the stand.

Redirect examination.

By Mr. O'Shea:

Q. You were asked this morning with respect to the manner of treating the returned sales. Now, will you please, in your own language, explain pages 13 and 15 of your summary, marked here as Plaintiff's Master's Exhibit 9-A, and in that explanation tell us the manner in which the returned sales are therein reflected at all?

A. On page 13, in the fourth column, under the caption "Profits Net of Losses, as shown on Schedule of Sales", we show a total of $1,751,217.38, which represents the profits net of losses on individual sales for the twenty-nine months period as shown on our schedules of sales. On page 15, under the first column, captioned "Total Profit on Profit Making Sales, as shown on Monthly Schedules of Sales", we show a total of $1,825,337.63, which represents the aggregate of profits on individual profit-making sales, [fol. 281] as shown on our schedules of sales for the twenty-nine months. The reconciliation of this figure—that is, $1,825,337.53, to the figure $1,751,217.38, is shown on page 12, and from the total profits from profit-making sales totaling $1,825,337.53, as shown on page 15, we have deducted $29,182.20, which represents credits to customers which were not allocated to particular sales, and included on monthly schedules of sales, under column captioned "Losses". In addition, we have deducted an amount of $181,490.10, as shown under column "C" on page 15, which represents the difference between $812,770.93, the aggregate of credits to customers on returned sales, net of $631,280.83, which represents our calculation of the cost of those returned sales. In other words, the amount representing the total under the fourth column on page 15, $1,614,665.33 represents the profit on individual profit making sales, after the exclusion of credits granted to customers on re-

turned sales, and also our estimate of the cost of those returned sales.

Q. Would it be correct to say, then, that in arriving at the $1,614,665.33, which appears on page 15 of Plaintiff's Master's Exhibit 9-A, that you did not take into consideration the cost of returned sales?

A. That is right.

Q. And that the cost of returned sales is $631,280.83?

A. That is right.

Q. On page 2 of Plaintiff's Master's Exhibit 9-A, I believe you have stated that that page constitutes a reconciliation between the alleged losses stated to have been suffered by the Duplate Corporation on its defendant's statement of account, filed with the Master here, and which amount to $1,016,634.20, and the alleged losses stated to have been suffered by the Duplate Corporation on the monthly income accounts of $977,395.53. Is that correct? [fol. 282] A. I would say it is substantially in agreement.

Q. That is what you are doing on this page—reconciling those two figures?

A. Yes, sir.

Q. Now, then, the figure of $977,395.53 is an amount determined before taking into consideration any of the so-called contested items. Is that correct?

A. That is correct.

Q. And on that same page 2 of Master's Exhibit 9-A, the differences appear to be $39,238.67. That is correct, is it not?

A. That is correct.

Q. That difference is reconciled on page 3 of Master's Exhibit 9-A, is it not?

A. That is correct.

Q. Which consists of the admitted error of interest on investment to the extent of $35,000, does it not?

A. Yes, sir.

Q. And certain other minor adjustments?

A. That is correct.

Q. Which total the $39,238.67?

A. That is correct.

Q. That reconciliation on page 3 also takes into consideration, first, the selling price of the specialty sales, and secondly, the cost of such specialty sales, both of which items, to wit, the selling price of the specialty sales and

the cost of the specialty sales, you accepted from the books of the Duplate Corporation. Is not that the fact?

A. That is correct.

Q. Without any readjustment or refiguring of costs on your part?

A. That is correct.

Q. Now, then, on page 2 of the same Master's Exhibit 9-A, your reconciliation there is tabulated by months, and that, as I understand it, is a tabulation of the alleged losses to be found on the Duplate Corporation's books, except as [fol. 283] it may be adjusted by months, to give effect to certain entries in the months to which they belong. Is my understanding correct?

A. No, sir.

Q. Well, what does the tabulation on page 2 show?

A. The total of $977,395.53, as shown on page 2, represents the monthly losses net of profits per the monthly income accounts which we prepared for the twenty-nine months, which is in agreement in aggregate with the losses shown by the books, except as follows: The loss for the twenty-nine months, as shown by the Duplate Corporation records, aggregates $865,188.40, to which we add $25,000 interest on investment for the year 1928, $60,000 interest on investment for the year 1929, and $25,000 for the five months of the year 1930, included on the account filed but not taken from Duplate's books. These items of interest on investment, totaling $110,000, added to the losses shown by the company's books, of $865,188.40, plus an adjustment of $7,156.05, explained on page 3 of the summary, minus the three items also explained on page 3 of the summary—that is, $4,661.22, $118.42 and $169.28—give us net loss of $977,395.53, as shown on page 2.

Q. Page 13 of Master's Exhibit 9-A also constitutes a reconciliation, does it not?

A. Yes, sir.

Q. And that is the only purpose of its insertion in this 9-A?

A. Yes, sir.

Q. Now, then, you have been asked a number of questions with respect to whether the defendant company, Duplate Corporation, received the so-called items of commission. Those questions were first directed to the income account for November, 1929, and later directed to the amount of

commissions for the entire accounting period of twenty-ninth months. Now, we will take the November income of 1929, as a typical case of these commissions on this ques-[fol. 284] tion as to whether they were received or not received. Directing your attention to that month, you were first asked whether the Duplate Corporation received the amount of $270,747.90. Do you know whether the Duplate Corporation received that amount or any other amount?

A. No, sir.

Q. Now, the fact is that all you know is that on the books of the Duplate Corporation there is a charge against the Pittsburgh Plate Glass Company of $270,747.90, with a corresponding credit of $6,660.17, that credit being for alleged commissions due the Pittsburgh Plate Glass Company. Is not that the fact?

A. That is right.

Q. That is all there is to this question of commissions?

A. Yes, sir.

Q. You don't know of your own knowledge whether the Pittsburgh Plate Glass Company paid, or the Duplate Company received, anything, and when I use the word "received", I mean whether it received a check or whether it received cash?

A. I don't know.

Q. You are accepting their books from which a reasonable inference is to be drawn, that if the balances were in favor of Duplate, that Pittsburgh Plate had paid that balance, and if they were in favor of Pittsburgh Plate, that Duplate paid that balance?

A. I assumed that, yes.

Q. Is it or is it not the fact that the Duplate Corporation records show that that company used an average cost per square foot?

A. That is right.

Q. Now, on each month's income account, you show an average selling price also, do you not?

A. I think it is on every month. It is on the one in front of me—November, 1929.

[fol. 285] Q. And that appears on the November 1929, in the column headed "Duplate" and the sub-column, "Average per Foot," does it not?

A. Yes, sir.

Q. And that refers to just plate glass in that column?

A. Yes, sir.

Q. Similarly you set down an average selling price per foot for the bullet-proof?

A. Yes, sir.

Q. And similarly you have an average selling price per foot for the sheet and the photo and picture?

A. Yes, sir.

Q. Now, with respect to bullet-proof sheets and photo and picture you have accepted the costs of those as appear on the books of the Duplate Corporation, without any adjustment whatsoever, have you not?

A. We have; with the exception of a portion of expenses.

Q. That is, general overhead, you mean by a portion of expenses?

A. Yes, which we have not pro-rated over the various departments.

Q. But so far as manufacturing cost is concerned, you have accepted the books of the Duplate Corporation for those figures?

A. Yes, sir.

Q. Now, please state why you did that with those specialties—bullet-proof, sheet and photo and picture?

A. As an answer to that question, I refer you to page 16 of our summary report, paragraph 4: "We were informed that the costs of bullet-proof, sheet, and other specialty products were ascertained by the company in some instances by arbitrary apportionment. Because of the relatively small quantities involved, the costs of these specialties have been included in these statements we prepared [fol. 286] at the amounts shown by the Duplate Corporation's records."

Q. Referring now to monthly statement for December, 1929, page 1, the item on that page of a sale to Seaman Body Corporation of 21,503-5 area, $43,020.90, I notice that there is no rate per square foot under the heading "Gross Sales Duplate Corporation to Pittsburgh Plate Glass Company." Why is there that omission there?

A. That omission was for no reason at all. There was no purpose in leaving it out, because the average rate per square foot, as shown under the next caption—that is, "Gross Sales Pittsburgh Plate Glass Company to Customers"—was $2 plus.

Q. Just an error in tabulating?

A. That is all.

Q. Because it was your scheme in all other places, apparently, excepting isolated instances of this kind, to put that rate down there?

A. Yes, sir.

Q. Now, Mr. Sharpe, on cross-examination you were asked with respect to the income account for December, 1929, on the question of an item entitled "Cash discount on sales." In that particular month, it amounts to $1615.97. You were asked as to whether the Duplate Company received that amount. Have you any knowledge of your own as to whether they received it or not?

A. No, sir.

Q. In its treatment, however, on the income account of December, 1929, you have credited that amount, to wit, $1615.97, to the Duplate Corporation, under the general expense items, have you not?

A. Yes, sir.

Q. Which, of course, means that you have charged it against the plaintiff in this action, so far as this accounting is concerned?

A. Yes, sir.

[fol. 287] Recross-examination.

By Mr. Christy:

Q. Just in order to understand you, where, for example, you say at the top of column 4 on page 15 of your summary, "Net Profit on Profit Making Sales, Column 'A' Net of Columns 'B' and 'C'," you mean column "A" after deducting the items of column "B" and "C," do you?

A. That is right.

Q. Now, I understand that you have stated now that the alleged cost of returns which you have not credited to the defendant company, total $631,280.83. Is that correct?

A. That is correct.

Q. Will you please subtract that figure from the footing of column "D," namely, $1,614,665.33, and tell me without comment what your answer is.

A. The difference between $1,614,665.33 and $631,280.83 is $983,384.50.

Q. Now, what did you give as a total of commissions which you have refused to credit to the defendant?

A. The total commissions which we have included as contested items of expense total $220,742.95.

Q. Will you please subtract that item, $220,742.95, from the figure of $983,384.50, and again give me, without comment, the result?

A. By subtracting an amount of $220,742.95 from an amount of $983,384.50, you get a resulting figure of $762,-641.55.

Q. Now, will you please tabulate what you call contested items of expense other than the cost of returns and commissions?

A. The costs of unaccounted for and unsold product and certain expenses included in computing costs of individual shipments in accordance with instructions of counsel, not [fol. 288] including, however, commissions paid to Pittsburgh Plate Glass Company, aggregating $220,742.95, and cost of returned sales, as shown on the monthly income accounts, and aggregating $631,280.83, are as follows:

Deductions for Company Costs:		
Plate Glass Stock Losses		$180,243.28
Plate Glass Cutting Department Losses		98,767.93
Assembling Department Losses		25,889.15
Assembling & Pressing Dept. Losses		13,816.12
Pressing Dept. Losses		896,741.64
Carbital Dept. Losses		2,253.11
Pyralin Examination Dept. Losses		87,389.47
Edging Dept. Losses		269,851.23
Edge Work Operation Losses		740.08
Finished Duplate Stock Losses		83,751.68
Salvaged or Reclaimed Stock—included by company at values placed by company		162,235.83
Adjustment resulting from Revaluation of Inventories		151,435.65
Company's estimated stock of Rejects charged to process costs	$60,334.61	
Less amt. later deducted by company	59,645.69	
		688.92
		$1,973,804.09

Reduction of Deductions:		
Adjustment of cost of Duplate transferred to		
Inventory Expense	$1,263.47	
Experimental Expense	3,142.17	
Adjusted value of salvage or reclaimed stock taken into process	310,175.40	
[fol. 289] Adjustment resulting from revaluation of Inventories	159,731.40	
Miscellaneous	1,595.04	
		475,907.48
Net Total of Items from Duplate Cost of Sales		$1,497,896.61
Items of Expense Eliminated:		
Experimental Expenses:		
New Adhesive Development	$18,557.94	
Goggle Lenses and Decorative Glass Development	7,254.72	
Other	115,241.28	
Portion of general expense representing reduction in cost of:		
Advertising Expense	1,263.47	
Experimental Expense	2,669.79	
Expense of Triplex Patent Case	11,645.42	
Payments for Fellowship—Mellon Institute	11,250.00	
Miscellaneous Patent Expense included in General Expense	4,691.40	
Extraordinary Expenses	21,273.83	
Total Item of Expense eliminated in contested items		193,847.85
Total items of Duplate Cost of Sales eliminated as contested item		1,497,896.61
[fol. 290] Costs of unaccounted for and/or unsold product and certain expenses excluded in computing costs of individual shipments in accordance with instructions of counsel, not including, however, commissions paid to Pittsburgh Plate Glass Company, nor does this total include the cost of returned sales, as shown on our monthly income account		$1,691,744.46

Q. You said once in your cross-examination, and again in answer to Mr. O'Shea a little while ago, that the Duplate Company made use of average costs per square foot. Just what did you mean by that?

A. In determining the costs of sales for any month, they used total area of plate glass shipped, times an average per foot cost, as determined by their cost accounts, or Schedules "J."

Q. Very true. But in computing their profits, they use total costs against total sales, do they not? Whereas, you use alleged average costs against individual sales.

A. That is correct.

Q. So that individual sales at a high price show a profit which is fictitiously high, while individual sales at a low price show a very much lower, if any, fictitious profit or loss. Is that not true?

A. I don't know.

Q. I will ask you again to make the assumption which I made at several points before; that the Master and the Court shall decide that the defendant is entitled to credit against its revenue from sales the cost of manufacture of returned defective products, if you, as a skilled professional accountant were asked to compute the value of that defective returned product, how would you do it?

[fol. 291] A. I don't quite understand the word "value" as used.

Q. Let me put the question this way: Making the assumption thus stated, how would you proceed as a skilled professional accountant to make the account conform to that decision?

A. By deducting from $1,614,665.33, as shown on column "D," page 15 of the summary report, the amount of $631,280.83, representing our calculation of the cost of manufacture of the returned product, leaving a total of $983,384.50.

Q. And that would right there eliminate all this computation by months, would it not?

A. No, sir.

Q. So far as concerns this item?

A. I believe you are right, yes.

(Adjourned until Friday, May 22, 1931, at 2 o'clock P. M.)

Afternoon Session

Friday, May 22, 2 P. M.

GEORGE E. SHARPE, resumes the stand.

Redirect examination.

By Mr. O'Shea:

Q. In making up your account, if the books of the Duplate Corporation showed that any goods that had theretofore been returned were subsequently sold, did you charge the Duplate Corporation with those sales and credit the Duplate Corporation with the cost of those sales?

A. In answer to your question, I might say that if any returned product was resold, we were unable to determine the quantity, if any. However, the cost accounts—that is, [fol. 292] Schedules "J"—during the twenty-nine months' period, show that an aggregate of 255,889 feet 7 inches of salvaged or reclaimed stock was retaken into process at a cost, according to these Schedules "J," aggregating $162,235.83. We could not determine what portion, if any, of that total area represented returns from customers as rejects, or what portion represented rejects as determined by the plant employees or officials during the process of manufacture. However, we have charged into process this aggregate area at a total cost of $310,175.40, which represents our calculation of the value of the reclaimed or salvaged glass, which value we have calculated at the same average cost of manufacture per foot as was used for the transfer of regular glass from the preceding stage of manufacture during that month; thus crediting the defendant corporation with the difference between $310,175.40 and $162,235.83, or $147,939.57 over and above their recorded credits.

Q. Recorded where? Where did they record their claim?

A. On their account as filed.

Recross-examination.

By Mr. Christy:

Q. Now, please finish your answer to the last question. You say you credited the defendant with the cost of sales, but you don't say whether or not you charged them with the proceeds of the sales?

A. I would like to state again our position as regards our report as filed. We have not credited the defendant, or charged the defendant, with these so-called items, but have merely set forth as items to be contested upon advice of counsel for the plaintiff.

Q. My question has nothing to do with these matters, and you are only confusing the situation. I will ask again the question which Mr. O'Shea asked you, and ask you to an- [fol. 293] swer all of it, and not only one part of it. In making up your account, if the books of the Duplate Corporation showed any goods that had theretofore been returned were subsequently sold, did you charge the Duplate Corporation with those sales and credit the Duplate Corporation with the cost of those sales?

A. Yes, sir.

C. L. McHenry, recalled, testified as follows:

Direct examination.

By Mr. O'Shea:

Q. Mr. McHenry, you were asked at the end of your examination when you were on the stand before, to produce what you described, I think, as requisition slips for raw glass from Duplate to Pittsburgh; that is to say, the slips, which went from Duplate to Pittsburgh Plate Glass Company. Have you found those requisition slips?

A. I have not. I was informed by the factory that they were destroyed.

Q. In your last testimony, as I recall it, you testified that two such requisition slips were made, both of which were sent to Pittsburgh Plate Glass; one of them kept by Pittsburgh Plate Glass, and one returned to the Duplate Corporation, on the truck carrying the glass. Did you look for both those slips?

A. The requisitions were only made for the glass by Duplate in single form; then at the Pittsburgh Plate Glass factory they made the shipping ticket in duplicate; the yellow copy, which is the original, is returned to Duplate on the truck, and a copy kept for their record. The original requisition of the Duplate Corporation and the yellow slip, which is their receiving ticket, I am informed, has been de-

stroyed, as they do not have room in their vault to carry these papers.

[fol. 294] Q. At any event, you couldn't find either the requisition slip or the delivery slip that came back to the Duplate Corporation?

A. I could not find them.

Q. Did you find a record that Pittsburgh Plate Glass Company kept of such deliveries?

A. I have their copies of the daily shipments, made from Pittsburgh Glass Company to Duplate.

Q. And you produced six typical examples of those—delivery tickets of Pittsburgh Plate Glass Company?

A. Yes, sir.

Mr. O'Shea: I offer in evidence the documents produced by the witness, and ask that they be marked Plaintiff's Master's Exhibit 22, 22-A, and 22-B, each consisting of two delivery tickets.

Q. Mr. McHenry, I show you Plaintiff's Master's Exhibit 22-B, and call your attention to the fact that that indicates deliveries to Pierce Arrow Company and Fisher Company. I will show them to you and ask you if that is not the fact?

A. It is delivery for glass for those cars.

Q. That is to say, that Master's Exhibit 22-B indicates that certain glass was delivered to Duplate Corporation for use as laminated glass on cars made by the Pierce Arrow Company and the Fisher Company. Is that correct?

A. Yes, sir.

Q. What quality of glass does Master's Exhibit 22-B indicate was delivered for use on those two cars?

A. My understanding is, where it is marked "Quality", and it is marked on here "1", for Pierce Arrow, it is first silvering quality, which would be for the Pierce Arrow. The Fisher delivery is also marked "1", which I understand is for first silvering. I am not familiar with these forms, but I understand from Mr. Datz that my explanation is correct.

[fol. 295] Q. Am I to understand then that Mr. Datz would be able to explain that better than you?

A. Yes, sir.

Q. He is more familiar with it?

A. Yes, sir.

PHILIP F. DATZ, recalled, testified as follows:

Direct examination.

By Mr. O'Shea:

Q. Mr. Datz, will you explain what the item on Plaintiff's Master's Exhibit 22-B is, immediately under "Pierce Arrow"? That is to say, the "17/64"?

A. That is used by the Pittsburgh Plate Glass Company to designate the quality of glass furnished for Pierce Arrow's order on Master's Exhibit 22-B.

Q. Also, at the top of that same exhibit, Plaintiff's Master's Exhibit 22-B, there is indicated a delivery of glass for use by the Fisher Body Corporation, which has the same quality glass, is there not?

A. Yes.

Q. Just explain what that quality is?

A. That is what is known as first silvering quality.

Q. At what price is that quality purchased, and for that purpose I show you an invoice dated in May, 1929, in order that you may refresh your recollection. At what price quality 1 7/64 is purchased, and in that connection pick out a 2'/8"/5' bracket?

A. Quality 1, which is first silvering in the 2'/8"/5' bracket?

A. Quality 1, which is first silvering in the 2'/8"/5' bracket is sold to the Duplate Corporation at 45 cents per square foot.

Q. Now, right under that it says, "Quality 1, mirror glazing," does it not?

A. Yes, sir.

Q. Do you understand that mirror glazing is the same thing as first silvering?

[fol. 296] A. My recollection of first silvering and second silvering is that it is a higher quality than mirror glazing or glazing.

Q. But the classification on Exhibit 22-B is simply "1 7/64"?

A. That is correct.

Q. And in the bill to which you have been referred, that is the same quality that you purchased at 45 cents, is it not?

A. Yes, sir.

Mr. O'Shea: I now offer in evidence the bill from Pittsburgh Plate Glass Company to Duplate Corporation, dated in May, 1929, to which the witness has referred, for the purpose of refreshing his recollection, and ask that that be marked as Plaintiff's Master's Exhibit No. 23.

Q. Now, on the same Master Exhibits 22-B, under the heading "J. N. Smith," thereon, what does the "2" mean under the heading "Quality"?

A. That represents quality 2 7/64.

Q. And at what price was the Duplate Company purchasing that quality in May, 1929?

A. In May, 1929, it purchased quality 2 in this particular size which is in the 2'/8"/5' bracket, at 39 cents per square foot.

Q. Is that known as glazing quality?

A. Quality 2, as shown on the invoice, is known as glazing quality.

Q. Is there any silvering quality shown on that Master's Exhibit 23 at all?

A. No, there isn't any shown.

Q. Have you any recollection as to the amount of silvering quality that was sold by Pittsburgh Plate to Duplate Corporation during this entire period from January 1, 1928, to June, 1930?

[fol. 297] A. Approximately 1800 feet in 1928, and approximately 900 feet in 1929.

Q. Do you know the car on which the raw glass ultimately sold to J. N. Smith was used?

A. You mean the particular make of car?

Q. The particular make of car.

A. No, I don't.

Q. You can tell, can you not, from Plaintiff's Master's Exhibit 22-B that the higher quality glass was used on the Fisher Body Corporation's car, and the Pierce Arrow Corporation's car?

A. Yes, sir.

Q. And that the lower quality glass was used on such laminated glass that was ultimately sold to J. N. Smith?

A. Correct.

Q. Do you know what price the Fisher Body Corporation paid for its laminated glass?

A. No, sir, I do not.

Q. I show you the month of May, included in Master's

Exhibit 9, and ask you if, on looking at that, you can determine what price Fisher Body Corporation was paying for its laminated glass?

A. There are two prices shown here.

Q. What are they?

A. One is $1.75 per foot, and the other is $1.904 per foot.

Q. Now, similarly, does that month of May, constituting a part of Master's Exhibit, 9 show what price J. N. Smith was paying for the glass sold to it?

A. Yes, it does.

Q. And what price was J. N. Smith paying, according to that month of May schedule?

A. $2.50 per foot.

Q. So that that schedule indicates that the customer who was receiving the cheaper quality of glass was paying a [fol. 298] higher price than the customer who was receiving the first quality of glass, does it not?

A. According to the schedule, yes.

(Adjourned to meet upon agreement of counsel.)

Pittsburgh, Pa., Wednesday, June 10, 1931.

Met pursuant to adjournment.

Counsel present as before.

FRANK L. DYER, a witness produced on behalf of the plaintiff, having been duly sworn, testified as follows:

Direct examination.

By Mr. O'Shea:

Q. Please give your full name, address and occupation.

A. Frank L. Dyer; Ventnor, New Jersey; I am at present practicing as a patent expert.

Q. Will you please state what experience you have had in the interpretation of United States Letters Patent?

A. I practiced as a patent lawyer from 1892 until the middle of 1908, first in Washington, and then, beginning in 1897, in New York. In 1903, I moved my office to the laboratory of Thomas A. Edison, and was with him until the end of 1912. During the time I was in active practice, I had occasion to consider many thousands of patents, and

thus became familiar with their interpretation. In 1908, I gave up the practice of law, and became president of the several Edison companies in Orange, which offices I held [fol. 299] until the end of 1912. Beginning in 1914, I began to practice as a patent expert, and since that time have been retained in several hundred patent suits relating to various arts, and have had occasion to consider and interpret many hundreds of patents.

Q. Will you please state what experience you have had in buying and selling patents, negotiating licenses thereunder, and advising clients and others as to the value of patents, and what should be paid or received as a royalty thereunder?

A. During the period I practiced as a patent lawyer, I had occasion to negotiate the sale of licenses of many patents, and I became especially active in this respect commencing with the time of my association with Mr. Edison. I negotiated a large number of license agreements for him, as well as for the sale of patents. In 1908, I was one of the organizers of the Motion Picture Patents Company, which controlled the Edison patents as well as others in the motion picture field, and I became president of that company and remained in that office until the end of 1912. The Motion Picture Patents Company was essentially a patent-holding company, and I had occasion to negotiate a large number of license agreements while associated with that concern. Probably the major agreements were upwards of fifty in number, and the subsidiary agreements ran into the thousands. In 1910, I was one of the organizers of a company called the Condensite Company of America, a concern engaged in the manufacture of products similar to bakelite. I was treasurer of that company from 1910 until about 1920, at which time it was sold to the Bakelite Company. While with that concern, I had occasion to negotiate for licenses under many patents. In 1917, I became associated with a concern called the Lektophone Corporation, [fol. 300] a patent-holding company, owner of patents on loud speakers, and I have been associated with that company up until the present time, as president or vice-president. In that connection, I also had occasion to negotiate many license agreements under patents. In 1914, I became associated with the Vreeland Apparatus Company, a patent-holding company, and am still a director of that

concern. By reason of my association with the Vreeland Company, I have negotiated many license agreements with the General Electric Company, American Telephone & Telegraph Company, Radio Corporation of America, and other concerns, as well as with the United States Government.

I am an inventor and have taken out upwards of a hundred patents in this country, a good many of which have been sold or licensed, and in connection with my own patents I have had a very substantial experience in connection with the licensing of patents. I also am frequently retained by the United States Government as an expert in the valuation of patents, in cases pending before the Board of Tax Appeals. These cases have always involved controversies with patent owners as to the value of patent properties as of March 1, 1913, when the present income tax law went into effect.

Q. Have you testified in patent infringement accountings as to the value of patents, particularly as to what would be a reasonable royalty to be paid for the use of patents?

A. I have so testified in a considerable number of cases.

Q. Have you read and do you understand the Benedictus United States Patent No. 1,182,739, dated May 9, 1916?

A. I have and do.

Q. And have you read the opinion of Judge F. P. Schoonmaker, in the United States District Court, for the West-[fol. 301] ern District of Pennsylvania, filed in the suit of Triplex Safety Glass Company against Duplate Corporation, wherein the Benedictus United States Patent No. 1,182,739 was involved?

A. Yes, sir.

Q. You also read the opinion of Judge Joseph Buffington, of the United States Court of Appeals for the Third District, in the same suit?

A. I have.

Q. Assuming that 60 per cent. of the personal injuries in automobiles is due to flying glass, and that Benedictus in his patent, and particularly in Claim 12 thereof, brought to the art a new article of manufacture, to wit, laminated or non-shatterable glass, which subsequently was largely used in the automobile trade for automobile windshields and windows, and in such use had a tendency to reduce the danger of personal injuries, due to flying glass, and that the laminated or non-shatterable glass of the Benedictus pat-

ent provided an unclouded glass, i. e., glass having the same visibility over an extended period, as ordinary plate and/or sheet glass, which was the kind of glass used in automobiles prior to the advent of Benedictus' non-shatterable glass; and as such entitled to a broad construction and "partakes of the humane", and that the non-shatterable glass of the Benedictus patent, and particularly Claim 12 thereof, was both novel and original with Benedictus, and that Benedictus was a pioneer in the development of such non-shatterable glass; assuming further that at the date of the filing of the Benedictus application for the United States Letters Patent in suit, and until the commercial development of the Benedictus patent in suit by the plaintiff in 1926, there was no non-shatterable glass used by the automobile industry; and that upon the coming on the market of non-shatterable glass made in accordance with the [fol. 302] teachings of the Benedictus patent in suit, there was, by the inherent merit of such glass, created a rapid and broadening market, so that the sales of Benedictus' non-shatterable glass in the year 1928 amounted to 3,100,000 square feet; and that in the year 1929 it amounted to 8,632,000 square feet; assuming further that at the date when the defendant herein entered the field and commenced the manufacture and sale of non-shatterable glass, there was no other known process of making a commercially acceptable product, as defined in Claim 12 of the Benedictus patent, except by the process disclosed therein; assuming further that the Triplex Company, in the year 1926-1927, spent in the neighborhood of $250,000, for the purpose of creating a public interest in, and a demand for, non-shatterable glass, by means of advertisement and other forms of publicity, including full-page advertisements in magazines, such as "The New Yorker," "Saturday Evening Post," "Collier's," "Literary Digest," "Vogue," "Vanity Fair," and in various motor publications, and also by means of advertisements inserted in the daily newspapers in the cities where said Triplex Company had established distributors, including New York, Philadelphia, Boston, Cleveland, St. Louis, Los Angeles, San Francisco, Oakland and Chicago; assuming further that on October 17, 1927, a contract had been made between the Triplex Safety Glass Company of North America, and the Ford Motor Company, under which the Ford Motor Company agreed to instal non-

shatterable glass made under the Benedictus patent in its vehicles, both initially and by way of replacement, manufactured by said Ford Company or its subsidiaries, and in which the Ford Company also agreed to use the trade-mark "Triplex" in all advertisements and advertising literature in which Triplex or laminated glass is referred to.

[fol. 303] Based on the foregoing assumptions, what, in your opinion, would be a fair and reasonable royalty for the manufacture of laminated glass to pay for the use of the Benedictus Patent No. 1,182,739, and in answer to that question please give such reasons for the opinion expressed by you as in your judgment are proper and pertinent to the subject matter.

A. In my opinion, a royalty of 15 per cent. of the selling price charged by the manufacturer would be a fair and entirely reasonable royalty, under the circumstances. In expressing this opinion, I have assumed that the manufacturer would add to the actual cost, including all items such as labor, material, factory overhead and general expense, a profit of 40 or 50 per cent., which I think is fair. I have also assumed that the patent should participate in the profit, to the extent of one-half. I think a patent of the character of the Benedictus patent is entitled to participate to the extent of one-half the profits. Assuming the entire cost to the manufacturer to be one dollar per square foot, adding 40 per cent. as profit, would make the selling price $1.40 per square foot. One-half of this profit is 20 cents, and 20 cents is about 14¼ per cent. Should the manufacturer add 50 per cent., which is also fair, the selling price would be $1.50 per square foot. One-half the profit would be 25 cents, which is one-sixth of the selling price, and therefore 16⅔ per cent. The figure I gave of 15 per cent. falls between these two extremes. A license agreement under the Benedictus patent, in my opinion, would be of great value, for a number of reasons.

Mr. Christy: Mr. Examiner, I don't object to the witness reading, but I would like the fact to be noted on the record.

Mr. O'Shea: Mr. Dyer, you have a right to refer to any notes you have made from your vast experience, to refresh [fol. 304] your recollection as to what your experience has been in these respects.

A. (Continuing.) In the first place, as I understand it, the Duplate Company entered the field about January 1,

1928, at which time the assumption would be that the Benedictus patent was a valid patent, as it was later held to be by the District Court and by the Circuit Court of Appeals. In the next place, at that time the Triplex Company, by means of advertising, had created a very substantial demand for laminated glass, as appears from one of the assumptions of your question. The market, therefore, was an easy one, because of this demand. Furthermore, the glass would be sold to a relatively few customers purchasing in large quantities, instead of to a large number of customers buying in small quantities. The selling expense, therefore, would be small. The fact that a contract was made with the Ford Company, such as you referred to in your question, would, in my opinion, be of very great value, because, with the adoption of non-shatterable glass by Ford, the other manufacturers would find it practically necessary also to use non-shatterable glass. The Triplex Company had necessarily developed a substantial amount of practical technique, and had contractual relations with the British Company, by reason of which any improvements developed in England would be communicated to the Triplex Company, so that a licensee under the Benedictus patent would naturally have the benefit of any improvements which might be made either by the American or English company. Furthermore, in the case of the Duplate Company, as I understand it, by reason of its very close relations to the Pittsburgh Plate Glass Company and the Viscoloid Company, a ready and cheap supply of raw materials was immediately at hand to permit the manufacture of the Benedictus glass. In this respect, the Duplate Com-
[fol. 305] pany was favorably situated. Under ordinary conditions, a licensee, taking a license under a patent, generally receives it from the patent owner, either the inventor or some holding company, and therefore the entire expense and risk of development is imposed upon the licensee. Here all this had been done by the Triplex Company, and when the Duplate Company entered the field, practically all risk had been eliminated and a substantial demand had been created. In other words, a license to the Duplate Company would have been practically an invitation on the part of the Triplex Company to divide the business of the company between them.

Q. Mr. Dyer, in your testimony you referred to a Mr. Edison. Can you give the full name of the Mr. Edison whom you had in mind?

A. Thomas A. Edison, the well-known inventor.

Q. Are you familiar with the license agreement made between the Triplex Safety Glass Company of North America and the Johnston Glass Company?

A. In a general sense, yes.

Q. Have you read that license agreement?

A. I have.

(No cross-examination.)

SYDNEY W. CAULFIELD, recalled on behalf of plaintiff, testified as follows:

(Plaintiff produces copy of the license agreement between Triplex Safety Glass Company and the Johnston Glass Company, of Hartford City, Indiana.)

Direct examination.

By Mr. O'Shea:

Q. Mr. Caulfield, I show you a copy of the license agreement between Triplex Safety Glass Company of North [fol. 306] America and Johnston Glass Company, and ask you if that is a true copy of the license agreement existing between those two companies?

A. Yes, sir.

Mr. O'Shea: I offer the copy of the license agreement in evidence as Plaintiff's Exhibit 24.

Q. Mr. Caulfield, are you prepared this morning to state what the Triplex production for the first five months of 1930 was?

A. Yes, sir. Plate glass, exclusive of Ford, 57,372 feet; sheet laminated glass, exclusive of Ford, 66,192 feet; plate glass to Ford, 98,221 feet; sheet glass to Ford, 1,890,818 square feet.

Q. In your testimony when you were on the stand before, Mr. Caulfield, you spoke of a Mr. Calhoun, who was connected with your organization. Will you please state

when he left the Triplex Safety Glass Company, approximately?

A. August, 1929.

Q. Do you know with what concern he became connected after he left your concern?

A. Duplate Corporation.

Q. Do you know in what capacity he was connected with the Duplate Corporation?

A. In the sales department. I don't know what title he had, if any.

Q. In your testimony when you were on the stand before, Mr. Caulfield, you testified with respect to the established prices of Triplex Safety Glass Company for windshield plate, other lights of plate and windshield sheet, and other lights of sheet?

A. Yes, sir.

Q. You also testified, as I recall it, that you had sales of plate both for windshield and other lights to Lincoln Motor Car Company. Is that correct?

A. We did.

[fol. 307] Q. Will you state at what prices the windshield plate and the other lights were sold to the Lincoln Motor Car Company?

A. The windshields were $3.53 a square foot, and the other lights were $3.26 a square foot. That is in accordance with the established price, plus a surcharge because of their requiring a higher quality of glass than ordinarily was used, so that the $3.26 covers the $2.96 plus thirty cents additional for silvering quality glass and similarly the $3.53 covers the $3.23 on the established price, plus thirty cents.

Q. That was for the windshields?

A. That was for the windshields, and division lights are classified as windshields.

Q. You also in your testimony, when we were here before, testified with respect to the companies who adopted Triplex glass as standard equipment, I believe in the year 1927. My recollection of your testimony is that you stated that the Chrysler Company adopted it.

A. Yes, sir.

Q. Were there any other companies?

A. There were. I was thinking at the time of plate only. The Yellow Cab Company, I believe is the name, or the Yellow Truck and Coach—I am not sure which—but the

manufacturers of the Yellow Taxicab in Chicago adopted sheet laminated glass as standard equipment in 1927.

Q. And purchased their requirements from the Triplex Safety Glass Company?

A. Yes, up until early 1928.

Q. Have you brought with you your invoices for the purchase of plate glass from the Pittsburgh Plate Glass Company?

A. I have brought a few that are indicative of the type of invoice.

[fol. 308] Q. Will you produce those?

A. (Witness does so.)

Q. You have produced invoices from the Pittsburgh Plate Glass Company to the Triplex Safety Glass Company, dated respectively June 26, 1928, September 21, 1929, and November 9, 1929. Do I understand those are the original invoices from the Pittsburgh Plate Glass Company to the Triplex Company?

A. Yes, sir.

Mr. O'Shea: I offer those three invoices in evidence as Plaintiff's Master's Exhibits 25-A, B and C.

Q. Have you with you some of the invoices covering purchases of pyralin from du Pont Viscoloid Company to the Triplex Safety Glass Company?

A. Yes, sir.

Q. How many of those have you produced?

A. I have four. They cover the various sizes. That is why I picked those four.

Q. Are these invoices which you have produced the original invoices from du Pont Viscoloid Company to the Triplex Safety Glass Company?

A. Yes, sir.

Mr. O'Shea: I offer these four invoices in evidence as Plaintiff's Master's Exhibit No. 26; invoice dated February 27, 1929, to be marked as 26-A; invoice dated June 13, 1929, to be marked as 26-B; invoice dated December 17, 1929, to be marked as 26-C; and invoice dated January 31, 1930, to be marked as 26-D.

Q. Have you had prepared under your supervision a tabulation showing the prices at which the Duplate Cor-

poration sold its laminated glass in comparison with the established prices during the respective periods of the accounting period? That is to say, the established prices [fol. 309] of the Triplex Safety Glass Company?

A. Yes, sir; I have taken the monthly reports as submitted by Lybrand, Ross Brothers & Montgomery, and have had listed the sales that Duplate made, as shown by that report, and the price per square foot, as shown by that report, and have shown alongside each entry what our established price was for that class of customer and for the quantity sold each one.

Q. Will you produce that tabulation, please?

A. (Witness does so.)

Mr. O'Shea: I offer it in evidence and ask to have it marked as Plaintiff's Master's Exhibit No. 27.

Mr. Christy: I understand that at the conclusion of plaintiff's evidence in chief, my opponent will make a specification of the claim advanced by the plaintiff in this case. Therefore, without objecting specifically to this exhibit, I reserve objection until that statement of claim is made.

Mr. O'Shea: I know of no rule of law that requires me to make a specification of my claim, except as it may be stated or implied from the proof which I have submitted to this court. Obviously, of course, I will in my brief to this Court set forth in detail what my claim shall be for profits and damages.

Mr. Christy: I am at fault in my statement, and humbly apologize for having put on record what I understood to have been a statement casually made. I now object to the exhibit as apparently based upon the unwarranted assumption that if the defendant had not made the sales listed in this exhibit, the plaintiff would have made the [fol. 310] sales at the price at which it seems to have been alleged that it would have made them, or, for that matter, at any price.

The Master: The exhibit will be admitted for the present, and we shall determine later as to the relevancy in part or in whole. Exception noted to the defendant.

Q. Mr. Caulfield, have you prepared a tabulation indicating the losses occasioned to Triplex Company, by reason of its enforced reduction of its selling prices?

A. Yes, sir; I have prepared a list of those sales which we were forced to make under our established price, both

as to distributors and car manufacturers for standard or optional equipment.

Q. Will you produce that tabulation?

A. (Witness does so.)

Mr. O'Shea: Plaintiff offers in evidence the tabulation showing the plaintiff's sales at its enforced reduced prices, and asks that the same be marked as Plaintiff's Master's Exhibit No. 28.

Mr. Christy: Objected to. Based upon unproven and unwarranted assumptions that plaintiff could have made these sales or any of them, at its established price, or at any price above that at which it did make them.

The Master: Objection overruled for the present. I will decide later relative to the admissibility of any of all of this.

(No cross-examination.)

(Recess until 1:30 o'clock P. M.)

[fol. 311] FRANCIS L. O. WADSWORTH, a witness produced on behalf of plaintiff, having been duly sworn, testified as follows:

Direct examination.

By Mr. O'Shea:

Q. Will you give your full name and address and occupation to the stenographer, Mr. Wadsworth?

A. Francis L. O. Wadsworth; residence, Pittsburgh, Pennsylvania; occupation, consulting engineer.

Q. Will you now please state what experience you have had in the interpretation of United States patents?

A. I have been involved in a number of patent suits, and in that connection, of course, I have had to study patents and determine what, in my opinion, was their proper construction and interpretation. I have also taken out upwards of two hundred patents of my own, and I have, in many cases, conducted prosecution of applications myself, and I am familiar with the practice in the United States Patent Office.

Q. Will you please state what experience you have had in buying and selling patents, negotiating licenses thereunder, and advising clients of yours and others as to the value of patents, and what should be paid or received as a royalty on their patents?

A. I have had quite an extended experience in that line, both in selling my own patents, or disposing of the rights in them, and I have had experience in helping my clients negotiate licenses for the disposal of their patent rights. I have also bought some patents for my clients.

Q. Has your experience involved patents pertaining to glass and glass novelties?

A. Yes, sir, a large number of them.

Q. Have you testified in patent infringing accountings as to the value of patents, and particularly as to what would [fol. 312] be a reasonable royalty payable for the use of patents?

A. I have testified in some accounting suits, but I do not recall for the moment whether the question of reasonable royalty was raised in those particular suits.

Q. Have you testified or assisted in the determination of the value of patents for tax purposes for the United States Government?

A. Yes, sir.

Q. Have you read and do you understand the Benedictus United States Patent No. 1,182,739, dated May 9, 1916?

A. Yes.

Q. Have you read the opinion of Judge F. P. Schoonmaker in United States District Court for the Western District of Pennsylvania, filed in the suit of Triplex Safety Glass Company of North America against Duplate Corporation, wherein the Benedictus United States Patent No. 1,182,739 was involved?

A. Yes.

Q. Have you also read the opinion of Judge Joseph Buffington of the United States Circuit Court of Appeals for the Third District in the same suit?

A. Yes.

Q. Assuming that 60 per cent. of the personal injuries in automobiles is due to flying glass, and that Benedictus in his patent, particularly in claim 12 thereof, brought to the art a new article of manufacture, to wit, laminated and non-shatterable glass, which subsequently was largely used

in the automobile trade for automobile windshields and windows, and in such use had a tendency to reduce the danger of personal injuries due to flying glass, and that the laminated or non-shatterable glass of the Benedictus patent provided an unclouded glass, i. e., glass having the same visibility over an extended period as ordinary plate and/or sheet glass, which was the kind of glass used in [fol. 313] automobiles prior to the advent of Benedictus' non-shatterable glass; and as such entitled to broad construction and "partakes of the humane," and that the non-shatterable glass of the Benedictus patent, and particularly claim 12 thereof, was both novel and original with Benedictus, and that Benedictus was a pioneer in the development of such non-shatterable glass; assuming further that at the date of the filing of the Benedictus application for the United States Letters Patent in suit, and until the commercial development of the Benedictus patent in suit, by the plaintiff in 1926, there was no non-shatterable glass used by the automobile industry; and that upon the coming on the market of non-shatterable glass made in accordance with the teachings of the Benedictus patent in suit, there was, by the inherent merit of such glass, created a rapid and broadening market, so that the sales of Benedictus's non-shatterable glass in the year 1928 amounted to 3,100,000 square feet, and that in the year 1929 amounted to 8,632,000 square feet; assuming further that the plaintiff herein established, maintained and received, in the years 1927 and 1928, from the distributors and jobbers, and automobile and body manufacturers, for optional equipment, a price of $4.80 per square foot for plate laminated glass, and $3.60 per square foot for sheet laminated glass, until March, 1928, and thereafter $2.40 square foot for sheet laminated glass; and that the distributor and jobber market and the automobile and body manufacturers' optional equipment market accepted such prices as fair, and paid such prices, and purchased at those prices; assuming further that the plaintiff herein established, maintained and received from automobile and body manufacturers for standard equipment (by which is meant sales to specific automobile manufacturers in substantial quantities, such as from upwards of 1000 square feet to 10,000 square feet per day) prices in accordance with the following tables:

[fol. 314]

"B"

	Up to 1,000 sq. ft. per day	Up to 2,000 sq ft. per day	Up to 5,000 sq. ft. per day	Up to 10,000 sq ft. per day
W/Ss-Plate	$3.23	$3.16	$3.06	$2.79
Other Lts.— Plate	2.96	2.87	2.77	2.50
W/Ss-Sheet	1.87	1.79	1.70	1.41
Other Lts.— Sheet	1.80	1.72	1.62	1.34

"C"

W/Ss-Plate	$2.81	$2.74	$2.64	$2.37
Other Lts.— Plate	2.66	2.57	2.47	2.20
W/Ss-Sheet	1.87	1.79	1.70	1.41
Other Lts.— Sheet	1.80	1.72	1.62	1.34

and that some automobile manufacturers accepted and paid such prices as fair prices and purchased laminated glass at such prices; based on the foregoing assumptions, and upon your experience as stated in your previous questions, what, in your opinion, would be a fair and reasonable royalty for a manufacturer of laminated glass to pay for the use of the Benedictus Patent No. 1,182,739, and in giving your answer to this question, please state such reasons as you deem proper and pertinent to the subject matter.

A. At what date do you assume this license agreement was granted?

Q. Assume that the license agreement would have been granted for the sales made by this defendant in or about the beginning of the year 1928, but in that connection I call your attention to the fact that this testimony covers any particular time.

[fol. 315] A. My answer to your question depends, of course, to some extent, upon the character of the license agreement. If the licensee received, in addition to the rights of operating under the Benedictus patent, the benefit of all the trade secrets and shop knowledge that was in the possession of the licensor at the date mentioned, and if there was no limitation as to the gross amount of the licensee's sales, or as to the territory in which

he might sell, then I would say that a fair and reasonable royalty for the use of the Benedictus patent would be 20 per cent. of the net selling price of the product; assuming of course further that the license agreement provided that a scale of prices should be established and maintained which were satisfactory to the licensor. If, on the other hand, the licensee was thrown upon his own resources in developing his own methods of manufacture of the product, and received only the benefit of the commercial development up to that time, in addition to his rights in the patent, and if he was in any way restricted as to the gross amount of his sales, or as to the territory in which he might sell, I would say that 15 per cent. of the net selling price would be a very fair and reasonable royalty, on the understanding, again, that the scale of prices at which the licensee would sell was one that would be satisfactory to the licensor. The reasons for my opinion that I have expressed are based upon my own personal experience with various license agreements of a similar nature. For example one of the outstanding instances of the acquirement of rights to the use of patents relating to the manufacture of glass is the agreement that was entered into between the Window Glass Machine Company and the American Window Glass Company in 1903, under which the American Window Glass Company acquired exclusive rights to the use of patents relating to the automatic manufacture of window glass on the following terms: The licensee engaged to pay a cash sum of $400,000 on the delivery of the [fol. 316] license agreement, and further agreed that he would pay the licensor a royalty which was for the first five years of the contract agreement one-half of the savings effected by the use of the machines in labor costs, and after five years, he would pay to the licensor a flat royalty of 15 per cent. of the selling price of the product. In that connection, I may say that the distinction is to be drawn between gross selling price and net selling price. The agreement between the two companies, which I have just mentioned, based the royalty on the gross selling price of the product, which is somewhat higher, of course, than the net selling price, under normal conditions.

Another example of a license agreement relating to the use of patents for the manufacture of glass is one

which was drawn between myself and the Pressed Prism Plate Glass Company, of Morgantown, West Virginia. That agreement provided that I should receive one-eighth of the authorized capital stock of the company, and in addition to that, one per cent of the gross selling price on all products above 500,000 square feet per year, and in further addition to that, a fixed cash retainer of, I think, a thousand dollars a year. The consideration in the matter of stock can be expressed in terms of royalty on selling price as result of the actual operations of the company under that agreement. The stock consideration entitled me, of course, to one-eighth of the profits of the company. As a matter of fact, the actual stock issued was less than the entire capital stock, and the percentage of stock I received was somewhat higher than 12½ per cent., but let that pass for the moment. The company was organized with the expectation of making a profit of at least 50 per cent. on the selling price of the glass, and in actual practice the profit which the company has received is very considerably in excess of that. In some cases, they have received a price as high as a dollar per square foot [fol. 317] for product that has cost less than 30 cents per square foot, and when I say it has cost less than that, I am referring to the manufacturing shop cost, including all overhead, but not to the selling expense. Using those figures as a basis for reducing my consideration to a royalty rate upon the selling price, it would appear that the equivalent royalty rate would be somewhere in the neighborhood of one-eighth of the average profit which might be roughly figured at 60 per cent. of the selling price, or expressed in figures, it would be about 7½ per cent, of the net selling price, exclusive of the additional one per cent. royalty which I was to receive on an output of over 500,000 square feet per year, but the consideration I received was, of course, only a part of the consideration received by the patent owners. The patent owners, as a matter of fact, received 50 per cent. of the authoriezd capital issued, and the return of the patent owners and myself together, therefore, would be on the basis of the above figures, about 25 per cent. of the net selling price.

Another good example of royalties received for the use of glass patents is that afforded by the various license agree-

ments that have been entered into between the Hartford-Empire Company and a number of glass manufacturers in the United States. Those license agreements provide for the payment of a fixed amount per gross of the glass articles produced and the royalty rates run from about nine cents per gross for small articles up to, I think, twenty-five cents per gross for very large articles. Those rates can be figured out in terms of royalty return on the net selling price without great difficulty. Take, for example, a royalty rate of ten cents a gross on all articles running from three to six ounces, as I recall the schedule—and I have a copy of it here, if you would like to see it. In that case the royalty rate on a four-ounce article would be a quarter of a cent a pound, and I know from long acquaintance with the [fol. 318] trade that articles of that weight are frequently sold at a price at least as low as a cent and a half a pound, and in some instances at even lower prices. That royalty rate of a quarter of a cent a pound would therefore in that case represent a royalty of one-sixth of the selling price, or about 16¼ per cent. I know of licenses that have been granted in other arts on which the royalty rates correspond to those of my answer.

One very good example of such a license is that under which the Oxford-Vance Company, one of my clients, handled the rights to the use of the Henry process on the reproduction of the wood grain surfaces on steels and other raw materials. The agreement under which the Oxford-Vance Company acquired these rights provided for the payment of a cash sum of $150,000, and for the payment of a royalty of five cents per square foot on a product that sold for thirty-five cents per square foot, representing a royalty of approximately 14 per cent. of the net selling price. The agreement further provided that the licensor should receive 10 per cent. of all royalties received by the licensee from sub-licensees. I could quote a number of other instances, if you wish me to do so, but I think those will be sufficient. I might further say that a very common basis for determining the royalty rate on inventions of established commercial value is to divide the profits equally between the licensor and the licensee. That is to say, the royalty rate or consideration received to the licensee would be about 50 per cent. of the profits obtained by the licensee. Personally, I have never been able to interest any manufacturer in a patent

composition unless I could show him a profit of at least 40 or 50 per cent. on the selling price of the product, and on that basis the fair royalty return would be half of that amount, or, say, 20 per cent. of the selling price received upon the material.

[fol. 319] Q. In your answer, Mr. Wadsworth, you assumed, I think, that the licensee would have the benefit of the manufacturing experience and trade secrets of the licensor. From your experience, have you found it customary that when the owner of the patents grants licenses thereunder, that a provision is made in such licenses to grant to the licensee the manufacturing experience and trade secrets of the licensor?

A. Yes, it is customary.

Cross-examination.

By Mr. Christy:

Q. In expressing your opinion upon the subject of reasonable royalty, did you take into consideration any matters other than those stated in the hypothetical question which was asked of you and those stated in your answer?

A. Yes, I think unconsciously I may have taken other matters into consideration, Mr. Christy; such matters, for example, as my views as to the possible commercial development of shatterproof glass.

Q. Well, reference was made to a production of about 8,000,000 square feet in one year. State whether or not, in making your estimate, you took into consideration the cost of production of that 8,000,000 square feet, or any part of it, either by the licensor or the supposed licensee. I am asking for facts and not guesses.

A. Yes, I did take it into consideration.

Q. Do you know the cost of manufacture?

A. No, not absolutely.

Q. Then why do you answer my last question that way?

A. Because I know a good deal about the cost of manufacturing various glass articles. To be specific, assuming that the cost of the glass in the shatterproof product was forty cents per square foot, and assuming that the cost [fol. 320] of the celluloid in that product was twenty cents a square foot, which would represent a cost of stock mate-

rial of one dollar per square foot, I would say from my long experience in the glass business, that the finished product ought to be produced at a shop cost not greater than 150 per cent. of the cost of the stock and material.

Q. You say ought to be produced?

A. Yes.

Q. You do not assert that it was produced?

A. No, I know nothing about the actual cost of production.

Q. Were you the plaintiff in the suit in equity entitled Wadsworth v. Pressed Prism Plate Glass Company, in the United States District Court for the Northern District of West Virginia, in which the opinion of the United States Circuit Court of Appeals for the Fourth District is reported in 239 Fed. Report 507?

A. Yes, sir.

Q. You testified as a witness for the defendant, did you not, in a window glass patent suit, brought by the owner of the patents, for the manufacture of window glass, to which you have alluded, against the Consolidated Window Glass Company and other defendants?

A. Yes, sir.

Q. Can you tell me offhand the number of patents which were involved in that suit, which were finally decided by the Court of Appeals for the Third Circuit to be of a basic or fundamental character in the production of machine-drawn window glass?

A. I think there were some seventeen or eighteen patents involved in that suit, Mr. Christy, but I can't be sure of the exact number. Of those patents, several were held by the Third District Court of Appeals to be of a basic value. [fol. 321] Q. Can you tell me in round numbers how many patents were involved in the original window glass license and how many patents that license covered at the time of the expiration of the earliest one?

A. At the time the contract was drawn, I think there were only some seven or eight patents and patent applications listed on the agreement. I can't answer the latter part of your question, Mr. Christy.

Q. You would say fifty or more, wouldn't you?

A. I think so.

(Adjourned to meet upon agreement of counsel.)

Proceedings resumed at a meeting by agreement of counsel held at the offices of Messrs. Christy, Christy & Wharton, Pittsburgh, Pennsylvania, commencing on Wednesday, January 27, 1932, at eleven o'clock A. M.

Present: G. Dixon Shrum, Esq., the Master; Ambrose L. O'Shea, Esq., of counsel for the plaintiff; Marshall A. Christy, Esq., William Watson Smith, Esq., L. E. Hickman, Esq., counsel for the defendant.

COLLOQUY

Mr. O'Shea: Before I close I would like to offer in evidence, as a part of this record, the supplemental bill of complaint in the suit in Equity No. 2295, as Plaintiff's Exhibit No. 29; the answer in the same suit as Plaintiff's Exhibit No. 29-A; the order permitting the filing of that supplemental bill as Plaintiff's Exhibit No. 29-B; and the interlocutory decree as Plaintiff's Exhibit No. 29-C.

[fol. 322] Mr. Smith: Will you please state the purpose of the offer?

Mr. O'Shea: This was a suit supplemental to the instant suit here, the purpose of which was to make Pittsburgh Plate Glass Company a part to this suit and responsible for any damages that may be recovered in this instant suit. That bill was answered by the defendant, and the Court allowed the filing of the supplemental bill and eventually entered therein an interlocutory consent decree.

Mr. Smith: There would seem to be no reason for the offer of these exhibits in these accounting proceedings, so far as counsel for the defendants are able to learn. We, therefore, object to the offer as incompetent and irrelevant.

The Master: We will receive them for the present and render a decision later as to whether they are relevant.

Mr. O'Shea: The purpose is to put into this record the fact that the Pittsburgh Plate Glass Company is now a party to this suit, and it has been decreed by the Court the Pittsburgh Plate Glass Company is responsible.

(Plaintiff closes its prima facie case.)

[fol. 323] Defendants' Testimony

ROBERT L. CLAUSE, a witness produced on behalf of the defendants, having been first duly sworn, testified as follows:

Direct examination.

By Mr. Christy:

Q. Your approximate age, Mr. Clause?

A. Forty-one years.

Q. Please outline in a general way your education and experience since graduation.

A. Graduation from college?

Q. Yes.

A. I graduated from Cornell University in the year 1914—mechanical engineering. Following my graduation, I worked in the engineering department of the Pittsburgh Plate Glass Company for a year, and then spent approximately five years at their various plants. Following this period, I spent a short time, approximately six months, at three of the company's warehouses. I was then transferred to the general office, where I held a minor position in the manufacturing department. Later became general superintendent of the plate glass factories, and later a vice-president of the company and chairman of the manufacturing department.

Q. And for how long a time have you been vice-president of the Pittsburgh Plate Glass Company and in charge of its manufacturing operations?

A. I have been a vice-president of the company for about seven years.

Q. And during all that period the head of the manufacturing department?

A. Yes, sir.

[fol. 324] Q. Have you also been connected with the company, in this case, now known as the Duplate Corporation, and, if so, during what period of time and in what capacity?

A. I have been intimately connected with the Pittsburgh Safety Glass Company and the Duplate Corporation since its beginning in January, 1928, holding position of vice-president in charge of operations.

Q. And in connection with your position with the Pittsburgh Safety Glass Company (later named the Duplate

Corporation) have you been familiar with its manufacturing operations?

A. I have been intimately associated with the operations from the very start.

Q. And practically the executive head of operations?

A. Yes, sir.

Q. It is already in evidence that the Pittsburgh Safety Glass Company commenced operations about January 1, 1928. Will you please state the conditions under which the company commenced to operate, and in a general way its early history?

A. Actual operations began in the spring of 1928. The building in which operations were started was a storage shed originally used by the Pittsburgh Plate Glass Company at Creighton, Pennsylvania, and remodeled slightly for the accommodation of the first equipment which we installed.

Q. About what was the size of that building?

A. The approximate size of the building would be forty to fifty feet wide and about eighty feet long; a one-story building. Before beginning actual operations in this building, we, of course, remodeled it, but knowing what we do today we appreciate that the surroundings in which we attempted to manufacture safety glass were entirely inadequate, the building, not being designed for the operation, [fol. 325] had no facilities for cleanliness which is one of the first essentials in the production of safety glass of this character.

By Mr. Smith:

Q. What kind of a floor had that building?

A. A concrete floor was laid in the building before we started operations. The walls were hollow tile; the roof was an inch board roof with tar paper covering. In the spring, at the time I mention, we were producing a very small quantity of safety glass, a large part of which was used for observation and test. The demand for safety glass in automobiles had not yet been created, and such orders as were received were for replacement jobs where safety glass was put in cars in place of plate glass. The quantity of orders available were so small that they did not permit an operation of any consequence and, as the result, the sales department of the Pittsburgh Plate Glass

Company, also acting as sales agents for the Pittsburgh Safety Glass Company, approached the Fisher Body Corporation and were successful in influencing them to put duplate in the Cadillac and La Salle cars. Up to this time we had employed from twenty-five to thirty men. With the acquisition of this order it was necessary to expand very rapidly, and we actually employed approximately four hundred men in the building already referred to, operating three shifts in order to get out sufficient product to satisfy the orders placed by the Fisher Body Corporation.

By Mr. Christy:

Q. What was the quality of this labor that you had to employ?

A. Well, Mr. Christy, it was just what could be picked up at the time. Operations in the Allegheny Valley at that period were quite brisk, and the problem of getting an organization of some four hundred men was no small order. [fol. 326] Q. Were they experienced?

A. Very few of the men had any experience in the plate glass business and a still fewer number had any experience in the safety glass business. When a company such as ours undertakes to supply an automobile account, they have a moral obligation that shipments will be made in accordance with the releases which they send you, and if there is a break-down in those shipments, it means the closing down of the assemoly plants where the automobiles are manufactured. We soon found that the surroundings in which we were operating were entirely inadequate and a second shed-like building was added to the existing one, about sixty feet in length, being the same width as the present one. The process which we used, and believed to be a sound one, broke down in many respects, causing defects varying in character to appear in the product, so that it was necessary to operate at a very much higher rate of production than the actual orders from the automobile accounts called for, to fulfill the releases which we were obligated to make.

Q. What do you mean by "releases"?

A. An order, Mr. Christy. That is a term used by the automobile accounts. In other words, we felt obligated to produce at all cost sufficient duplate of sound quality to satisfy this account, regardless of the number of duplates

started through the operation to give the right number required. In brief, our rejection was very high.

Q. What were the causes for these excessive rejections, if you can give them in an order that can be understood?

A. Well, the defects which could crop into this product known as safety glass are so many and so varied that I don't believe I could answer your question in one statement. To enlarge on your question, however, I think all people going into the safety glass business at the outset [fol. 327] had the impression that it was rather a simple thing of taking two pieces of glass and one piece of celluloid, and once combined you had a sound piece of safety glass. The celluloid people themselves didn't know much about their own product, and in many cases the celluloid was found to be defective after it was fabricated into safety glass, and many defects in celluloid were discovered about which the celluloid people knew very little. To touch on this point briefly, these defects today are referred to as scum, haze, smudge, and so forth, all being defects that had never been considered in the production of celluloid for other purposes, but nevertheless making a defective safety glass which was not acceptable to the automobile trade.

Q. How about the sticking together of the elements which made up the piece of duplate?

A. I don't believe I understood your question, Mr. Christy.

Q. I mean what defects, if any, were caused by insufficient cementation, if I may so express it?

A. Well, at this stage in the industry I believe the defect in safety glass known as a let-go or separation, which occurred at the edge, was looked upon as being a defect in cementation, as you ask your question.

Q. Did you have many of these edge let-gos, and what was the cause of it?

A. These edge let-gos or separations were one of our serious problems and were caused entirely, I should say, by a defect in our process rather than the lack of proper cementation. At that time we employed what was known as the rubber bag autoclave system whereby two plates of glass, with a sheet of celluloid between them, were put into a rubber bag; the rubber bag was evacuated, and then a number of rubber bags were put on a rack and put into an autoclave which was filled with water, to which

heat and pressure were added. Before inserting the safety [fol. 328] glass sandwich in the rubber bag a piece of canvas was wrapped around it to protect the rubber bag from the sharp corners of the glass, because when the bag was evacuated the bag pulled down over the edges of the glass in a very intimate manner.

Q. Now, Mr. Clause, if you will excuse me for asking questions a little more in detail, I understand at the start the two sheets of glass with the interposed celluloid were sealed together preliminarily. Then please follow and state what the next operation was.

A. By sealing together I judge you mean held in some fashion so one would not slip upon the other.

Q. That is it exactly, with an interposed layer of celluloid.

A. Yes.

Q. Then I understand you put that sandwich, if I may so call it, into a rubber bag?

A. Yes, sir.

Q. And what was the character of this rubber bag? That is, what did it look like? How big was it?

A. These bags were about thirty inches wide and about fifty inches long; flat, like an envelope that opens at the end.

Q. And then the rubber bag was closed in some way and the air exhausted from it? Is that what you mean?

A. Yes, sir.

Q. Why was the air exhausted from the bag?

A. Well, without taking the air out of the bag, you might have air in the sandwich of glass, so that under the heat and pressure applied to the exterior of the bag when put in the autoclave you create a very high pressure within the bag and do not get the pressing effect which was desirous to make the finished product.

[fol. 329] Q. That is, you wanted to exhaust the air from the rubber bag so that you could effectively apply pressure (with heat) to the sandwich inside the bag? Is that it?

A. Yes, sir.

The Master: Mr. Clause, will you tell a bit more about this autoclave?

Q. Now, what do you mean by the autoclave?

A. An autoclave is a chamber which can be sealed and of sufficient strength to withstand the pressure in this case

to which we wished to subject this product.

Q. You mean it was a tank?

A. It was a steel tank with a tight-fitting door.

Q. About what size?

A. About four feet in diameter and about twelve feet long. Into this autoclave racks on which the rubber bags were supported were rolled in, the door closed and sealed, water pumped in, then circulated, raising the temperature and the pressure.

Q. What was the object of raising the temperature and the pressure of the water?

A. That was the means of pressing the two lights together.

Q. That is, the two pieces of glass with the celluloid?

A. The two pieces of glass with celluloid between them.

Q. Making a permanent adhesion?

A. Yes, making a permanent adhesion.

Q. Now, you had in your autoclave then, when you closed it, about how many rubber bags, each containing a duplate sandwich?

A. Maybe forty or fifty—sixty.

Q. On racks?

A. On racks.

Q. So the water could circulate around them?

[fol. 330] A. The water could circulate around between the racks and the bags supported by the racks. Shall I proceed with the description of the autoclave?

Q. Yes, if you will, please.

A. A cycle of temperature and pressure was followed out which was found sufficient to make a sound adhesion between the plates of glass and the celluloid; after which time the temperature of the water was reduced, then finally drained out, the door opened, and the charge of bags and racks removed.

Q. Can you give me in a general way, not exactly, about the pressure and about the temperature that was employed in this autoclave sealing operation?

A. Approximately, pressure of 150 pounds; temperature of 250.

Q. One hundred and fifty pounds to the square inch?

A. Yes.

Q. And these bags on the racks were entirely immersed in the water?

A. Entirely so.

Q. What effect had that regarding the evenness of pressure around the sandwiches?

A. Well, your question is the break-down in the process. When the bag was evacuated, of course it drew down over the edges of the glass, and then with the added pressure that was put on in the autoclave a strain was set up along the edge of the sandwich in the bag, which extruded the celluloid at the edge more than it should be extruded, due to the bending of the plate glass. While the actual deflection of the edges of the plate glass is very slight, it is sufficient to extrude this pyralin or celluloid, yet at the same time with the cement employed adhering to it, so that when the pressure was taken off the product a strain was set up in the edge and the glass was constantly trying to relieve this strain by going back to its normal shape. This caused [fol. 331] the so-called let-go or edge separation already referred to, which was blamed onto poor cementation about which you asked, in the early stages of safety glass manufacture.

By Mr. Smith:

Q. Mr. Clause, this mechanical operation is not as clear to me as it is to you. I am not expert in this and I imagine the Master is more or less in the same shape, and I want to ask you a few questions to see if we can understand this matter. Now, take this autoclave. If it had been possible at that time, in 1928, to put your duplates, as they were, in a preliminary way, inside that autoclave, then raise the pressure of the water, would that make an even pressure of water upon the glass, without any bags in it at all?

A. Yes, sir.

Q. And raising the temperature of the water, would that have any effect also in helping the annealing process or combining process?

A. I don't believe I understand your question when you speak of annealing.

Q. When you exert pressure on two pieces of plate glass with a piece of celluloid between them, if you exert that pressure in warm water, does that tend to unite better than if you did it in a cold place, for example?

A. You have to have the heat.

Q. What does the heat do?

A. The heat causes the celluloid to become plastic.

Q. Then, by pumping more water into this autoclave all the time you kept raising the pressure inside all the time?

A. Yes, sir.

Q. And that squeezes these pieces of glass together?

A. Yes, sir.

[fol. 332] Q. On the warm celluloid, and tends to make them unite.

A. Yes, sir.

Q. That was what you were after?

A. Yes, sir.

Q. What did these rubber bags do that interfered with that process?

A. First of all, I think I should state that the present process used requires a preliminary pressure to keep the water or liquid or fluid out.

Q. That is your present process?

A. Yes.

Q. I am addressing my questions to the process in 1928. When you put these bags around the sheets of glass and put them in the autoclave and raised the pressure, how did that interfere with the uniting?

A. That prevented you from getting a hydrostatic pressure in the autoclave in which the reaction on the glass is uniform all over.

Q. I think you said a while ago the bags drew down over the ends of the glass. Is that right?

A. Yes, sir.

Q. Was that because the air went out of the bags? The air is out of the bag?

A. Yes, the air is out of the bag when you make this pressing.

Q. Let me ask a question. When you put your sheets of glass into one of these bags you pump the air out of the bag in some way? You exhaust the air so as to have no air interference with this process?

A. Yes, sir.

Q. How do you get the air out of the rubber bag?

A. The bags were constructed with a small nipple and valve onto which you attached a vacuum, a source of vacuum, and exhausted the air from it as you would exhaust air from anything where you wished to create a vacuum or partial vacuum.

[fol. 333] Q. You did this mechanically?

A. Yes, sir.

Q. When the air was out how did you keep it from getting back in?

A. Closed the valve.

Q. Was there a valve?

A. A valve and nipple.

Q. You have the glass inside the bag, the air exhausted, and the valve turned to keep the air out?

A. Yes, sir.

Q. And the bag in that shape was put into the autoclave?

A. Yes, sir.

Q. Will you explain to the Master what happened in any interference, if there was interference, by this bag with the proper pressing of those articles inside the autoclave? That is, I mean pressing them in such manner as would not create these let-gos. How did the bag interfere with that?

A. I think perhaps I may have to use a diagram to show you, but in words of course the bag has some resiliency or some resistance to bending; therefore, in being bent over the edges of the glass under this pressure it creates more pressure on the edge of the glass sandwich than is created over the general area of the plate.

Q. Did that have any effect on the union of the edges?

A. It has no effect on the union of the edges at the time but, as explained already, it extrudes more celluloid from the edge than you have throughout the plate. In other words, your average thickness of celluloid is a certain figure. Due to this added pressure on the edge at the time of pressing, the celluloid at the edge is then thinner than the average thickness of the celluloid. During the process [fol. 334] the glass adheres to that celluloid, even though it is bent down on the edges, so that when you relieve the pressure in the operation the glass again tends to become straightened out at the edges, and causes a strain, which causes a separation between the glass and the celluloid.

Q. May I make an illustration here to see if I understand it? Do I understand that extracting it your upper plate of glass would be something like that, bending down at the edge, and the lower plate bending up at the edge?

A. Yes, sir.

Q. That was due to the strain of these bags over the edges?

A. Yes, sir.

Q. You say the glass would unite although bent in that shape?

A. Yes, sir.

Q. When you take that finished product out of the autoclave with that bend in it what happened to the finished product when it went into use, let us say?

A. If it didn't let go before it left our factory, it would let go when it was out on the job or in the field in many cases.

Q. Do you use this rubber bag process at the present time?

A. No, sir; in the main, no. For very large sizes which we are not able to handle with our present operation we sometimes have to employ it, or for bent glass.

Q. Leaving out this drawing down at the edge of the glass trouble with the rubber bags, what trouble, if any, did you have with the rubber bags themselves?

A. Of course, the rubber bags would fail, let in moisture, and in every case where moisture gets into the bag the product within the bag comes out defective. The water would at times turn to steam or vapor and seep into the [fol. 335] edges of the product, turning the celluloid white, and you would not have a bond between the glass and the celluloid.

Q. Must you keep the water out from between the upper and lower plates of glass so as to make a merchantable product, when you have it in the autoclave I mean? Must you keep the water out from between the sheets of glass when it is in the autoclave?

A. Yes.

Q. If you don't keep it out from between the sheets of glass, what happens?

A. The product would come out defective, would not adhere; the water would turn the celluloid white—break it down, destroy it.

Q. You say these bags fail. What do you mean by failing?

A. Get a hole in them—pinhole.

Q. That would let water in?

A. Leak.

Q. If you expose rubber bags such as you were using to high pressure and high temperature, such as you were using, does that have any effect in destroying the quality of the rubber?

A. Very decided effect. The first bags we got from the rubber people would only make a few journeys—few trips—into the autoclave. Through co-operation with them we got bags that were fairly satisfactory from the standpoint of life, but nevertheless in the use of them they would develop a leak, which would have to be patched—repaired—just as you repair an inner tube in an automobile tire.

Q. Now, in your plant did you use the best inspection you could to see that you were using tight rubber bags and those of proper quality?

A. Knowing the effect of a leak on the product, I think every precaution was taken to prevent them.

Q. In spite of that, you did get leaks though?

[fol. 336] A. The sealing system, or the clamp which was used to seal the rubber envelope or bag at the end, was a crude affair and often-times the leak would occur there rather than through the actual rubber bag. I suppose twenty-five different types of clamps were developed to make an improvement on the crude one used, but up to the time we stopped using this system nothing was found better than the crude clamp we used.

Q. Did or did not the use of these rubber bags lead to numerous defective duplates?

A. I think I should explain that we at times put more than one sandwich in the bag to increase the production. To keep the plates of glass from slipping on the sheet of celluloid, paper stickers were used around the edges to keep them in position. Even the thickness of a piece of paper would cause many times sufficient excess pressure at that point to break the plate or start a vent, which of course is the same thing as a break.

Q. Supposing that book was the lower sheet of plate glass and this yellow tablet was the celluloid and this book was the upper sheet of plate glass, would you describe to the Master how you held those together so that you could slip them into these rubber bags?

A. Paper stickers were pasted around the edges.

By Mr. Christy:

Q. At intervals.

A. Yes, at intervals.

By Mr. Smith:

Q. Mucilage or what?

A. Mucilage—gum paper labels.

Q. And in that shape it was put inside the rubber bag? [fol. 337] A. Then the sandwich was placed in a piece of canvas and the whole sandwich, canvas and all, slipped into the bag.

Q. Now, in the spring of 1928 did you have any precedents to go by in this process of yours? Did you have any patterns to follow, or was this a new enterprise?

A. Well, the Pittsburgh Plate Glass Company had been carrying on development work in safety glass at the same time the du Pont Viscoloid Company carried on a similar development. Our early experience had been with presses which could produce one or more lights of safety glass at one pressing.

By Mr. Christy:

Q. Just like an ordinary letter press you mean?

A. Just like a letter press. The experience of the du Pont Viscoloid Company was with the rubber bag autoclave system. When the union of the two companies was made our experience was interchanged, and after weighing both systems we believed the rubber bag autoclave system the better of the two, and proceeded on that basis.

By Mr. Smith:

Q. Then you encountered all these troubles?

A. We encountered troubles when we went into production that we had not encountered when using that system on a more or less laboratory scale.

Q. Had there been any standard practice with respect to using glass in rubber bags in autoclave for the purpose of making laminated glass before this? Was there some history of the business that you knew about, or did you have to develop this thing?

A. The Saftee Glass Company at Philadelphia were using the autoclave glass system.

Q. How long had they been using it?

A. I think the Saftee Glass Company is the oldest company in the United States in the manufacture of safety [fol. 338] glass. Mr. Sherts, I think, could answer that question at some later time.

Q. Did you consider when you were developing this method of making safety glass that you were following in somebody else's footsteps, or were you blazing out a trail for yourselves—inventing a process?

A. We went into it on a very much larger scale than anything we knew of and the system of autoclave we used and the manner of handling the product and so forth was quite a departure, I think, from anything that had been done before, inasmuch as nobody had gone into the production on such a scale up to this time.

Q. How long did you use this system of rubber bags in the autoclave? I am not speaking now of isolated cases of large sizes but for your general commercial product. How long did you use that?

A. We used this system from the spring of 1928 until some time in the year 1929.

Q. And then, just in a few words, what different method did you adopt in 1929 for holding the sandwich together before it was introduced into the autoclave, after you gave up the rubber bags?

A. We used a preliminary press method, and that is what we employ today.

Q. What is that, briefly?

A. The two lights of glass with the light of celluloid between, after proper treatment with adhesive, are laid up and put into a press which gives it a very light pressure as compared to the system employed for the final pressing, or sufficient pressure to make a satisfactory safety glass, and only sufficient heat and pressure at this preliminary pressing is employed to make the glass adhere to the celluloid.

Q. Let me interrupt. You speak of heat. Do you also use heat in this preliminary pressure?

[fol. 339] A. Yes, sir.

Q. How is that? What do you call the members of the press—the leaves?

A. The top and bottom.

Q. Are the top and bottom heated?

A. The press is so designed that the heat can be applied to the two pressure surfaces.

Q. You put the sandwich in there and press it lightly with that heat?

A. Yes, sir.

Q. What does that do?

A. That causes the glass to unite with the celluloid.

Q. Does it unite sufficiently to keep out air and water?

A. A vacuum is applied at the time of heat and pressure and the air is evacuated from the surfaces of the glass and celluloid, and the heat and pressure are sufficient to make a sandwich, which to all intents and purposes to a layman would look like a finished article.

Q. At least it keeps out the air from between the plates and it also keeps the water out?

A. There is no water employed here.

Q. I say when you subsequently put it into water it keeps the water out?

A. The two pieces of glass and the celluloid in this preliminary pressing are completely united.

Q. But not sufficiently united to put them on the market as safety glass?

A. No, sir; from the standpoint of safety it is not a finished product.

Q. You take that sandwich which has been preliminarily pressed together, and you don't put that in the rubber bags, do you now?

A. No.

Q. Where do you put it?

[fol. 340] A. On a rack similar to the racks on which the bags were placed, and roll the whole rack into the autoclave, surround the whole rack, product and all, with a liquid, through which medium you can apply heat and pressure.

Q. Is there any secret about the liquid?

A. No.

Q. What is it?

A. Carbitol—most anything. We can use water.

Q. What do you use in practice?

A. We are using, I think, carbitol.

Q. Whatever it is you use, you put this liquid in the autoclave, the door of the autoclave is closed, and then you in some way increase the pressure in the liquid in the autoclave?

A. Yes, sir.

Q. How do you increase that pressure?

A. By pumps.

Q. You pump more liquid in?

A. Yes, we pump more liquid in.

Q. What does that do to the sandwich?

A. Completely presses it.

Q. Squeezes it tighter and tighter?

A. Yes, sir.

Q. Much tighter than it was when it came out of the preliminary press?

A. Yes, sir. It squeezes it to the pressure you apply.

Q. Is that higher than on the preliminary press?

A. Yes, sir. On the final pressing we employ practically the same pressure as we employed in the autoclave where the rubber bags were used.

Q. How much heat is on this liquid on the final pressure?

A. The same heats are used in this system as the old.

Q. What were they?

[fol. 341] A. About 150 pounds pressure and 250 degrees.

Q. How long do you keep one batch of sandwiches in the autoclave under this heat and pressure before you take them out and put a new batch in?

A. About eight minutes.

Q. It takes eight minutes to complete the process?

A. Depending on the pressure used. You complete the cycle.

Q. How does this method compare with your old rubber bag method as to the quality of the product?

A. Well, it is all the difference between success and failure.

Q. That is a fine general expression, but do you mean you don't have as many rejects?

A. The new process which we have just described does not create any strain on the edges. We therefore eliminate all rejections from the so-called let-go or edge separation. Coming in contact with nothing but a liquid, we have virtually no breakage whatever. I might say that the only breakage which occurs would occur from a piece of glass which in the cutting perhaps had a nick on the edge from which a vent might start.

Q. Now, that seems a little more clear to me.

A. I would like to add to that. On this subject of edge strains and let-gos—separations—some of the product manufactured from the beginning has had what is known as a seal around the edge of the product. This seal was supposed to prevent moisture from seeping into the edge of

the product and causing a let-go. I don't mean to say that safety glass subjected to moisture at the edges will not separate, but the practice as carried on from the beginning of this manufacture of safety glass where edge sealing was done relieved this edge strain, even at the time when none of us in the business knew anything about edge strain or knew that the edge strain was there. The Fisher Body Company did not like the appearance of this seal, which is [fol. 342] made by removing from the edge of the safety-glass celluloid to a depth of maybe an eighth of an inch into which black pitch or similar product is forced, because when a window of a car is lowered part way this black line was objectionable from their viewpoint, and particularly in the case of the windshield which they manufacture, known as the "V. V." type, ventilation is taken into the car by raising the windshield. So that if this seal was put into the windshield and the windshield then raised to permit ventilation, this black line appeared almost in front of the driver's eye.

Q. Do you mean that when you use pitch to seal the edges of the glass as a preliminary seal before it is finally pressed —do you mean that pitch makes a permanent black line on the finished product?

A. It is the last thing put into the product before it is shipped. After the product is manufactured the celluloid is dug out from the edge and then replaced with the pitch.

Q. I thought the pitch went in preliminarily.

A. No.

Q. And that leaves a permanent black line?

A. Yes, it leaves a permanent black line. Now, there is another point which I think should be well understood by everybody, which is important in the operation of a plant and has a great bearing on the losses you sustain. From the nature of the process described it is apparent that you take two pieces of glass and a piece of celluloid which are to begin with the size of the finished product, where you manufacture for an automobile account. The only reduction in size, if you can refer to it as a reduction, in this article is in the edging of the product, the grinding and polishing of the edges, which is required by the automobile manufacturers and removes a very insignificant amount of the product. In other words, it is only a dressing of the [fol. 343] edge to take off the sharp corners and make them

presentable. Therefore, anything looked upon as a defect in the finished product by the automobile manufacturer causes a complete loss of the light of safety glass, unless it can be cut down to another size which they have use for. In the case of the windshield, which under the process employed at this time was the hardest pattern to make, due to its shape and size, there was nothing to cut it down to except a rear light. This meant a loss of maybe 50 or 75 per cent. of the area of the original windshield besides the labor of cutting it down. It was also true at this particular time when we were manufacturing only for the Cadillac and La Salle the assortment of sizes for the windows of the car known as body lights was not great, and in many cases the rejection of a light of glass meant the complete loss of that feetage.

Q. Do you mean, Mr. Clause, when you put these sandwiches into the autoclave they had been cut to size, the size of the finished product you were producing?

A. Very accurately to size.

Q. In other words, if you were producing windshields, you didn't cut them out after you took the material out of the autoclave, but you cut them out to the proper size and put them into the au-oclave?

A. That is right.

Q. If one of these windshields would have a bubble or crack or let-go, would you frequently have to reject all the glass included in that windshield?

A. That was the cause of our high losses.

Q. Unless it was possible it was of such shape to cut it down to a smaller light?

A. That is right.

Q. Was that frequently the case or not?

A. Not as frequently as we would like it to have been.

[fol. 344] Q. That was because there were not many sizes of window glass used in the Cadillac and LaSalle cars at that time?

A. Yes, sir.

By the Master:

Q. Mr. Clause, you just said there when it was impossible to use a piece of glass for the windshield and you cut it down, it could only be cut and used as a rear light. You mean rear light of glass for the window?

A. Yes, the rear window.

Q. How close to the edge did this pyralin begin to diminish in size when you used the envelope system?

A. To answer your question I will have to do it in a rather indirect way. The let-gos that were caused by this strain in the edge, which would appear perhaps an hour after we took the glass out of the autoclave, or perhaps the next day after we thought we had something that was perfect, would extend in the main from about an eighth to a quarter of an inch. I would say an average of three-sixteenths. Some would be greater and some would be less, but I think perhaps that answers your question in rather a broad or general way. In other words, the actual bending of the glass is something I don't believe you can hardly measure with a micrometer. We first discovered it by using polarized light and detecting the strain in these edges, believing there was something that caused this separation around the edge.

Q. And could you not increase the size of your light sufficiently to take care of that?

Mr. Smith: Before you put it into the autoclave, you mean?

The Master: Yes, that is right.

A. We had that brilliant idea and we were going to make all safety glass an inch wider—that would be an inch wider [fol. 345] in cross sections each way—and we purchased, I believe, four or six saws which we developed ourselves, and we were going to run this product through these saws as you would lumber through a lumber mill, and take off a half inch on the sides, if they were square sides, and trust to luck on the curved side because we couldn't saw a curve, although we even went to the trouble to develop a saw that would make a curve to attack this very problem. It so happened just at the time we got the first of those four or six saws in operation that we discovered the new system of making the product where the edge strain is not developed.

Q. How long did your process with the use of the envelope take—about eight minutes?

A. It was a longer cycle.

Q. Longer cycle than that that you now use?

A. Yes. If I remember correctly, we had a cycle of about forty-five minutes from the time the glass was charged

until we could get it out again. The mass to be heated up and cooled down was greater and of course, due to the fact that the safety glass was surrounded by a rubber bag, which is a pretty good insulator, it took more time for the heat to filter into it, and I think perhaps we know more about it today than we did then, and to play safe we left the heat and pressure on longer than was necessary.

By Mr. Smith:

Q. Now, Mr. Clause, is it necessary to make these pieces of glass for automobiles, say windshield glass or glass for the windows, to an accurate size? Does the difference of an eighth or sixteenth of an inch make any material difference?

A. In some cases they reject it for a thirty-second.

Q. Why do they have to be so accurate? Are they fitted into anything?

A. The automobiles, of course, are an assembled product and all the articles, if they are purchased outside, have to [fol. 346] be very accurate. They undergo a very rigid inspection and when they receive them they don't want anything to happen to hold up the assembling of a body. To begin with, they fit into channels or frames, in the case of windshields we will say, and in the body lights they fit into channels. They must be free to roll up and down.

Q. Would an eighth of an inch difference be material in that use of the glass?

A. I would be glad if later on you could ask Mr. Sherts as to the accuracy that is required and the care which is taken to produce a product and have it received by the automobile manufacturers and have no rejections.

Q. You mean the difference of an eighth of an inch is a material thing?

A. It is the difference between accepting and rejecting that light.

Q. What difference would it make if your glass would be open on the edges—if your finished laminated glass were open on the edges an eighth to three-eighths of an inch?

A. It permits moisture from the air or rain, in case of an automobile in service, creeping into that edge.

Q. Does that hurt the celluloid?

A. That will cause the product to break down.

Q. Will it interfere with the visibility through the glass?

A. The chances are it would creep on up into the area of

the window or windshield of the car and the point become visible.

Q. Did your company originate in a commercial way this preliminary pressing of the sandwiches so as to eliminate the rubber bags in the autoclave?

A. Yes, sir.

Q. You pioneered in that?

[fol. 347] A. Yes, sir.

Q. You had to make your own experience?

A. Yes, sir.

Q. And I believe you proceeded by the process of trial and error? Is that the way a man does in a plant with a new process?

A. I think that is a good way to describe it.

Q. Now, as I understand it, this old process of yours with the rubber bags, while that was in vogue, you had a great deal of trouble with imperfect duplate. Is that so?

A. In addition to the defects which came through the rubber bag autoclave process, the surroundings in which we manufactured we know today were not satisfactory.

Q. Just a moment, Mr. Clause. Excuse me for trying to get this clear on the record. Before you go into that will you state whether or not you did have a great deal of trouble with your product while you were using the rubber bag system?

A. Yes, we did have.

Q. And a great deal of glass rejected?

A. A tremendous quantity.

Q. Through the reasons you have described?

A. Yes, sir.

Q. Will you proceed and tell us whether there was anything else in your operations to cause rejects of glass or cause your customers to return glass to you after you sold it to them?

A. The buildings in which we were operating, as described, were rather loose buildings; infiltration of air was present; grit could creep in; the buildings were dusty. Pyralin or celluloid is electrostatic, and a clean piece of pyralin subjected to unclean air at times becomes coated with particles of dust, lint, anything present in the air, and they are rather hard to get off because of static electricity.

[fol. 348] Q. Why do you have to get them off?

A. Well, if you put into a sandwich and pressed into the safety glass, they are decidedly noticeable, not only to the eye when it is subjected to daylight, but in a windshield, where light from another car strikes it, it creates an effect which is almost blinding. Your vision is cut down. There is diffusion of the light and it makes a defect which the automobile people will not accept. In character it is similar to what is known as haze in celluloid itself.

Q. Proceed.

A. The process of preparing the sandwich before pressing is one of washing the two lights of glass, cleaning this pyralin or celluloid, spraying the two lights of glass, and then laying up in the form of a sandwich preparatory to going into the pressing operation. In the surroundings in which we operated, although we thought we were taking all precautions, we found that the finished product was not free from dirt and we had many rejections from dirt being pressed into the product.

Q. Have you made any change so as to keep out dust in your present practice?

A. Our new buildings are modern in every respect, tight with regard to infiltration of air, and wherever cleanliness is necessary to prevent this defect from creeping into the product we actually use washed air in rooms where no one but the operators are permitted to enter. In the old plant we thought we were taking every precaution, and even went so far as to wearing uniforms on the people handling the product at this stage of the operation and insisted the boys wear caps so that hair might not fall onto the product. This defect, coupled with something like twenty-one defects which were discovered celluloid could carry, plus breakage, inexperience in handling, chipping, the defects in the autoclave system, and then the problem [fol. 349] we ran into of edging this product before shipping caused a loss that was astounding. The loss was so high that we were all alarmed, and the accumulation of rejected glass, to which we attached some value in the hopes that we could cut it down, became so extreme that we almost crowded ourselves out of the building in which we were operating and finally had to carry great quantities of the rejected product over to the Pittsburgh Plate Glass Works, No. 1 plant, and store it in areas available there.

Q. Now, Mr. Clause, in addition to what you have described, and leaving out the matter of the edging for the present, what about the location of the plant where you made duplate with reference to the warehouse where the finished material was placed prior to shipment?

A. Well, that was another condition which caused us a great deal of loss.

By the Master:

Q. I believe you testified that you built a second plant when the order from the Fisher Body people came in?

A. It was after the Fisher Body order was had and we found we were too cramped in the first building.

Q. Did you make any change at all in the construction of that plant with respect to the construction of your first plant?

A. No, it was the same type of plant.

By Mr. Christy:

Q. Let me ask a question. Aren't we confusing matters? You mean that when you found that you had to increase your productive capacity so greatly to fill these Fisher orders, you put an additional building on the first one in which you started?

A. That is correct.

[fol. 350] Q. You are not referring to the new plant which you built?

A. No. I would like to add it was something that had to be thrown up in the shortest possible time to take care of the rush we were in, and I think that building was completed and we were in it in sixty days. They are a very cheap type of building, and inasmuch as we knew and had already taken steps to erect a new building, we naturally didn't want to put any more investment in those than possible because in the end it had to go up——

By Mr. Smith:

Q. You had this old shed which you had rehabilitated for a plant to start with?

A. Yes, sir.

Q. Now, when you got the Fisher Body order for Cadillac and La Salle cars and so forth, did that require you to make an immediate addition to that plant?

A. We didn't make an addition to the plant until we found we were too cramped. We couldn't get the production out of the first building.

Q. When you found you were too cramped in the first building, what was the first step you took to relieve yourself?

A. Added to the building.

Q. That addition—what kind of addition was it?

A. The same type of construction.

Q. Did you have to build it rapidly?

A. Very.

Q. Why?

A. Because we were so cramped we were afraid we couldn't get the orders out to the Fisher Body Company.

Q. When you built your new plant, the plant you now use, where was that located with reference to the old plant?

[fol. 351] A. At the extreme end of the property adjacent to the shipping facilities of the Plate Glass Company. In other words, we located it in the most convenient place to pass glass into the Duplate Corporation's plant and in the event we wished to ship duplate from the plate glass plant we could take it back and ship it from there.

Q. The new building was built close to the Pittsburgh Plate Glass Company's warehouse?

A. Yes, sir.

Q. The old building was how far away?

A. A third of a mile or so.

Q. The new building—was it the same type of construction as the old building?

A. It was the best type of construction we could possibly build.

Q. Was it the same as the old?

A. No, sir.

Q. How did it differ?

A. This is a steel and brick, concrete building, tight in every respect, with all facilities for cleanliness, heat and so on.

Q. When did you begin to use that new building?

A. I would prefer to have that question referred to Mr. Sherts at a later time, if satisfactory.

Q. You don't remember the exact date?

A. No.

(Recess taken until two o'clock P. M.)

[fol. 352] Afternoon Session

ROBERT L. CLAUSE, resumes the stand.

Direct examination (continued).

By Mr. Smith:

Q. Mr. Clause, you were speaking about the inconvenient location of your first plant. I don't now refer to your modern plant, but the first plant you had for making duplate. How did you get the duplate, after it had been made in that factory, to the warehouse of the Plate Glass Company from which point it was to be shipped?

A. It was stocked onto racks, which at the glass plant you would call a glass buggy, and transported by electrical trucks similar to those employed by the stations for handling baggage, except that the platform is such it would go underneath the buggy and pick it up off its legs.

Q. These trucks were run by electric power, were they?

A. Electric battery trucks.

Q. Something like the truck you see running around the station where they haul trunks?

A. Quite similar except for their form of platform.

Q. When these trucks ran from your factory where the duplate was made to the warehouse what did they run on?

A. Well, within the duplate factory itself of course they ran on the concrete floor. The roadway from the duplate factory to the Works No. 1 of the Pittsburgh Plate Glass Company was a roadway made up of planks, and we had a railroad to cross, and in some cases they ran on the regular service road used by the automobiles in the plant.

[fol. 353] Q. Did you have to cross transversely this railroad track?

A. Yes, sir.

Q. Just one track or two?

A. One track I think.

Q. Well, what effect did this trucking have on the duplate?

A. The jostling received in transit was detrimental, even though we took precautions of putting paper and then corrugated paper between. Dirt, particles of sand, would settle down between it and cause scratches on the surface, and so on, and of course the jostling, if there was any tendency of the glass to bend—the nature of the cutting of the glass

prior to its lamination—the glass would bend; you would get breakage.

Q. Did you build up a wooden platform between the rails of the railroad track and outside the rails so as to make the crossing as smooth as you could?

A. Yes, sir.

Q. In spite of that, was there some jostling there?

A. There was bound to be when you crossed the rails.

Q. Did you have to cross the railroad tracks to get to the warehouse?

A. Yes, sir.

Q. No other way?

A. No other way.

Q. In your testimony this morning you spoke about these let-gos at the edge of the glass extending in how far?

A. From an eighth to a quarter of an inch.

Q. Now, suppose you finished a plate like that, let us say, which had an eighth of an inch let-go around the edge, would an automobile concern accept that?

[fol. 354] A. In the early stages, before they and before we knew what would take place, they did accept some of it. That eventually came back on us.

Q. You mean they were eventually returned?

A. They were eventually returned, yes.

Q. Why?

A. Because, even though that much let-go relieved this edge strain, it permitted the elements, when the light of glass was placed in an automobile, to get into the crevices between the celluloid and the glass and the defect would then grow.

Q. Suppose you had a glass in a windshield with an eighth of an inch let-go in the edge, and the automobile bearing that windshield was exposed to stormy weather where the rain would beat up against it and that sort of thing, would that have any effect on the windshield?

A. The presence of the water there would in time cause that let-go to grow up into the plate to the point where it would become objectionable to the eye, or, if let run long enough, would perhaps grow to the center of the plate.

Q. The water would beat against the windshield and run down and get into the channel and eventually get into this let-go place?

A. That is correct.

Q. And if the water got into that let-go, did that progressively destroy the celluloid?

A. Yes, sir.

Q. How far would that let-go grow into the windshield?

A. That might grow into the middle of the plate.

Q. Take the duplate sheets that you brought out of the autoclave that had a let-go of an eighth of an inch at the time they would not be accepted by the automobile manufacturers, if you would store those plates, would anything happen to them?

[fol. 355] A. The let-gos would even grow when stored in the duplate factory.

Q. How did you account for that, Mr. Clause?

A. Due to the natural moisture in the atmosphere.

Q. You mean they would extend further?

A. They might grow in and clear up into the center of the plate.

Mr. O'Shea: Mr. Smith, do you know this is already in the record?

Mr. Smith: I have read the record and it does not look anything like as good to me as this testimony.

Mr. O'Shea: This is just to bring it out clearly?

Mr. Smith: Yes, that is the purpose of it.

Q. How much was your production at this first plant of yours—I mean the first plant plus the annex to that plant—when you got into production, Mr. Clause?

A. We sprang from production of virtually nothing, as explained, to shipping four thousand lights of duplate a day.

Q. Four thousand lights a day?

A. Yes, sir.

Q. Well, would you have to produce at that time more than four thousand lights in the plant to have that many to ship?

A. We had to produce many more than that to ship four thousand which we were obliged to ship.

Q. Why would you have to produce many more?

A. Because of the defects which I have described causing the plates when finished to be rejected by the manufacturers.

Q. And did much of the glass you shipped to the automobile manufacturers at that time come back to you as returned and rejected by them?

[fol. 356] A. Yes, sir. The first glass they rejected before they put it into cars as not coming up to specifications, and secondly glass which went into cars and became defective and had to be replaced.

Q. That was part of the history of developing this new art I suppose?

A. Yes, sir.

Q. Now, there was an answer you gave this morning that I think I didn't understand entirely. It was this in substance: you said, "I do not say that safety glass subjected to moisture will not separate." You mean by "moisture" water, do you, or moisture from the air?

A. It might be moisture or water. Of course, it is water, but to be specific take the case of a windshield which is set in a rigid frame—the glass set in a rigid frame. It is put in there with felt or some like substance which will hold moisture, and in the presence of that much moisture, if unsealed, the glass will tend to let go.

Q. Did you mean to say then when you use your present process, which involves the preliminary pressing before the sandwiches go into the autoclave, that when those sandwiches were put into the autoclave the liquid inside the autoclave would get inside the sandwich or not?

A. Well, only to a very slight degree because the moisture that gets into that sandwich is taken in through the pyralin in a very slow way. In other words, you might compare it with water going through wood. It would go in very slowly.

Q. And the sandwich is in the autoclave only eight minutes, I believe?

A. A very short time.

Q. So would it or would it not have the liquid extend into it in a material degree?

[fol. 357] A. It has no detrimental effect in that length of time.

Q. It would not extend in materially?

A. No, sir.

Q. What is the liquid—water or what?

A. We are using carbitol.

Q. Does that hurt the celluloid?

A. No, it doesn't hurt the celluloid. It is known as a plasticizer.

* * * * * * *

Q. Now, what cutting did these block sizes which were delivered from the Plate Glass Company to the Pittsburgh Safety Glass Company require?

A. The block size, of course, was larger than the finished size of the light being made into safety glass, which represents the exact size which goes into the car, and a template of the finished article, having the contours and shape complete, was laid on the block size and a cutter employing a Red Devil wheel scores the glass and breaks off the excess area.

Q. Just what do you mean by "breaking off"?

A. Well, after glass is cut with a diamond or wheel, either with the fingers or pair of plyers you can cause it to snap down the line where it has been scored.

Q. Was that cutting operation to contour the same or different from the cutting operation commonly employed in your plate glass business?

A. It is quite different in this respect, Mr. Christy, up to this time we had not cut glass to contour except in rare cases.

Q. You mean the Plate Glass Company?

A. Yes, the Plate Glass Company. The automobile manufacturers have maintained their own cutting departments and edging departments. Years ago, when the automobile industry first started, at another plant we did cut to size [fol. 358] and edge glass for the automobile industry.

Q. That was plain sheet glass?

A. Plain, heavy——

Q. Polished plate glass?

A. Yes. Due to economies which they could effect, they have taken that business virtually away from us. Only in rare cases do we do cutting to size and edge work for the automobile plants, so the organization here was doing a new operation in the sense that it had to be very accurate to size.

Q. You spoke of vents? What do you mean by that?

A. A vent is a crack which starts from a chip or rough spot, caused when the glass is snapped and does not give a clean-cut edge.

Q. You mean it occurs in the cut edge?

A. It occurs starting at the cut edge.

Q. Speaking generally, when you organized this duplate cutting department, had you available cutters who were skilled in that work?

A. We had cutters to man our own factory, but had to take on other cutters to do the additional cutting.

Q. I mean cutting to contour.

A. We had men experienced in cutting, but I wouldn't say they were necessarily experienced in cutting to contour.

Q. Now, this is all in the record already, Mr. Clause, but in order to carry on the connected operation and to inform the Master, I will refer you to an exhibit already in the case—Defendant's Exhibit "A" used at the trial—which purports to be a diagram showing the assembling operation in your laminating plant. Do you recognize that as being substantially correct?

[fol. 359] A. Yes, diagrammatically that is very correct.

Q. And just to follow this through, at the extreme end of this conveyor on the diagram we have two sheets of glass of the contour of a windshield placed side by side. Is that correct?

A. Yes, sir.

Q. Now, what happens to them first?

A. They are first treated with pumice stone.

Q. In what way?

A. For the purpose of cleaning. Pumice stone is rubbed on those with a piece of felt in a moist condition.

Q. Then they pass to the point marked "2," still side by side. What happens there?

A. They are dried under this warm air pumice dryer.

Q. That is to dry the pumice?

A. To drive the moisture out of the pumice.

Q. Then they go to point "3"?

A. The pumice in a dried condition is brushed off with revolving brushes above the glass.

Q. And it is also sucked up through a hood?

A. A hood was over the brushes so the pumice in the

form of powder would be drawn off for the purpose of cleanliness.

Q. Then the sheets on the conveyors seem to pass through an opening or slot in the wall of a room which is called spraying and assembling room. Is that correct?

A. Yes, sir.

Q. Then what happens to them?

A. Then they were treated with the adhesive.

Q. And how was that done?

A. It was done with a spray which swept back and forth over the plates as they passed through this compartment where they were mounted.

[fol. 360] Q. You might call them swinging atomizers?

A. That is a good way.

Q. And that left a coating of moist gelatin on the surfaces of the plates?

A. Yes, sir.

Q. Did you always have the same number of atomizers, or was that changed from time to time?

A. I couldn't answer that question, Mr. Christy. At that point it was a matter of experimentation—development—to get the most uniform coating of cement on there that it was possible to put on.

Q. Then the plates, now coated with the gelatin solution, passed on to the point marked "5." What was there? Do you recall?

A. It was a very short distance from there on to the points where the plates were assembled, and between that point the gelatin had the excess water taken off.

Q. That is, it is called on this sketch "Warm Air Dryer." Is that correct?

A. Yes, sir.

Q. Then, to the right of the warm air dryer at point "5," and about in line with numeral "6," you have the words, "Assembled Plates." What happened there?

A. These two plates that started back here were put one upon the other after a sheet of pyralin or celluloid was put between them.

Q. That is, a sheet of pyralin was laid on one plate and the other was folded over on it?

A. Yes, the sheet of celluloid being already cut to size to match the plates in question.

Q. Then the assembled package passed out of the room to the point marked "Inspectors." What happened there?

A. The plate was picked up by these men——

[fol. 361] Q. That was the assembled plate?

A. Yes, sir. The assmbled sandwich was picked up by these inspectors and examined the best they could do to see if any dirt or defects of the various characters that have happened were in the plate before it went into the autoclave. At this point the inspector or man next to him put these gum labels around the edge to keep it from shifting or permitting any dirt to get in.

Q. To hold the sandwich together?

A. Yes, to hold the sandwich together.

Q. And after that the assembled plates went to the rubber bags, as you have already testified?

A. Yes, sir.

Q. I have here a blueprint which I will undertake to prove, which is marked as having been issued by the Fisher Body Corporation, and bears the date "4/30/28." Can you tell me what that print represents?

A. Well, that is a print of a windshield, giving the finished dimensions to which the finished article must conform.

Mr. Christy: I ask to have the print marked for Identification as Defendants' Master's Exhibit "D."

Q. Now, will you first describe, Mr. Clause, the operation of cutting that glass plate to contour?

A. The cutting of a plate to contour is done by means of a template, which is laid down on a block size of glass larger than the light of glass you want to finish with, and the man draws one of these Red Devil wheels around the template, scoring the glass around the periphery of the template. After that is done he is then able to crack the edges of the block size of glass away from the point where it is scored, leaving the remaining glass the size of the template, with allowances for the width of the cutter.

[fol. 362] Q. Those details, of course, I will bring out from the other witnesses but now I wish you would proceed and tell us what the edging operation was after you have the sandwich finished by pressure in the autoclave.

A. In the case of the windshield used by the Fisher Body Company, known as the "V. V." windshield, the light of

glass can be raised and lowered for ventilation, and to slide in the channels made for the purpose at the sides of the windshield the glass has to be smooth to permit the glass to slide in the channels. The bottom edge had to be ground and polished according to their specification, which called for a rounded edge. By rounded edge I mean an edge that would be half of a pencil. They call it a rounded pencil edge.

Q. Now, how was that rounded edge made?

A. The rounded edge is formed first in the rough by holding the windshield on its edge on a vertical sandstone wheel in which a groove has beeu cut the approximate contour of the edge which they wish to receive in the finished form. That takes off the rough of the glass. It is then followed up by putting that same edge on a smoothing wheel where a pumice stone is employed, also a vertical wheel but made out of wood, and that operation was then followed by one of polishing on a vertical rotating wheel where felt and rouge is employed. The felt is on the face of the wheel and rouge is poured on as the polishing agent.

Q. I can recognize there might be no great difficulty in making a straight edge in the way you have described, but I don't understand yet how you can get the rounded edge on the curved portion at the bottom of this windshield as shown on this print Exhibit "D." Can you let me have that a little more fully?

A. I would like to ask whether you are referring to the contour here or the rounded edge of the section of the contour?

[fol. 363] Q. I am referring to the rounded edge of the section of the contour.

A. Then I think I will have to repeat in part what I have already said, that the contour of the section is formed by the groove created in the sand wheel on which this edge is run. The smoothing and polishing operations are done on a softer wheel which will fit the contour of the section already originated by the first wheel.

Q. Had you any men experienced in this sort of work in the year 1928?

A. Not in the handling of safety glass. We had men who were skilled in the art of edging glass, such as plate glass for dresser tops, desk tops, and that sort of thing, where a similar edge is sometimes called for.

Q. I didn't know they had rounded edges. I thought they were always angular.

A. Some people call for a rounded edge.

Q. Do these dresser tops have these curved edges?

A. They might have.

Q. You are speaking there of edging a plain sheet of plate glass. Is there any difference between that operation and the edging of a combined laminated sheet like this duplate?

A. There is a very great difference from the standpoint of shrinkage during the operation.

Q. What do you mean by shrinkage?

A. Breakage. The problem of putting the polished edge on this contour was so extreme that we nearly had to give it up, and a man in charge of our edging department at another plant, to whom we sent the windshields when we fell down on this grinding and polishing job, devised a scheme of producing an edge which to all intents and purposes answered the requirements of the Fisher Body Company, looked like a ground and polished edge, but, as a [fol. 364] matter of fact, was not. It was what is known as a seamed edge. By rounding the two corners of that edge but not touching the bottom face, the two rounded edges when polished and viewed from the front have a lens action which causes the edge to look as though it had a pencil rounded edge, ground and polished complete. After the difficulty which we experienced in grinding and polishing this edge, and I think I had better explain why it was difficult or why the problem of grinding and polishing it became paramount at this point. In this "V. V." windshield the seal to keep out a driving rain is made by this ground and polished edge, which is visible when the windshield is open——

Q. You mean at the bottom?

A. At the bottom—seating itself upon a rubber strip in the body of the car at the base of the windshield frame. Unless the contour on the bottom edge of the windshield was virtually perfect, it would not seat itself sufficiently to keep out a driving rain. In the edging of that edge, as described, on a vertical wheel, it was almost impossible for a man to carry on the operation at a uniform rate, and if he ground longer on one point than he did on another, he would deviate from the contour to the point that the wind-

shield would not seat itself when placed in the car, and leakage would occur. After having many windshields rejected for this defect, the foreman in charge of another department in one of our other plants devised the scheme of so-called seaming this edge so that the original contour of the glass made by the cutter at the time of cutting the plate was retained, this edge being very much more accurate than anything that could be produced by a grinding. In addition to the problem of grinding and polishing this edge to the contour required, there was the problem of edging safety glass which is not present in edging ordinary plate glass. Being a product made up of two pieces of glass [fol. 365] in thickness 7/64ths of an inch, it is very subject to chipping, and the presence of the celluloid between the two pieces further complicates the operation. As the glass would wear away in the edging operation the celluloid had to be dealt with. It would gum up the wheel on which you were grinding the edge and cause what is known as firing, and as the result you would get chips along the edge which you were trying to grind and polish. Chips in this bottom edge, which we have referred to as being difficult to handle, were magnified by the lens action of these two edges put on by the seam and they shone like a diamond as you viewed them from the seat of the car. Defects as easily introduced and as simple as the one just described were responsible for a very high rejection on the part of the Fisher Body Company.

Q. Now, let us take this in steps. In the first place you say——

Mr. O'Shea: May I interrupt? Of course, Mr. Master, I don't know what this drawing is yet and, therefore, I reserve all objections as to the drawing and testimony pertaining thereto until we get a proof of the drawing.

Mr. Christy: As I said, I expect to prove the drawing.

Q. Now, taking these steps in sequence, you say first you tried to make what you would call a rounded edge like a half pencil at the base of this windshield?

A. Yes, sir.

Q. You found that so difficult that you went into an operation where you didn't touch the central portion of the sheet but ground the opposite faces at a slight angle?

A. That is correct.

Q. And you say that made chips and caused trouble?
[fol. 366] A. The edging operation in general causes chips, Mr. Christy—the seaming operation.
Q. I meant seaming operation.
A. The seaming operation relieved us of some of the difficulty we experienced in trying to put on the pencil edge. I mention that seaming because it was almost impossible to give the Fisher Body Corporation what they wanted, and only after much effort and many rejections did we develop this other scheme which permitted us to go ahead on any basis at all.
Q. And the seaming operation was the best you could do?
A. Yes, sir.
Q. And you continued that on this particular contour?
A. To the end. The experience I have mentioned in connection with edging safety glass has been experienced by all the manufacturers of safety glass.

Mr. O'Shea: I object to that as a conclusion of the witness and move to strike it out as to what the experience of the other manufacturers were.

Q. Just state what experience you had to base your statement as to the experience of the other manufacturers.

Mr. O'Shea: I object to that.

A. Through contact with other manufacturers and the employment of men who had worked in other manufacturing plants.
Q. Not what you observed yourself?
A. No.

Mr. O'Shea: Objected to and move to strike it out.
The Master: We will hear what the witness has to say.
[fol. 367] Mr. O'Shea: Exception.

A. (Continued.) My point in making that reference was for no other purpose than to state in the first stages this was a necessity. Today we have machines which have been perfected to overcome the difficulties in edging safety glass which we did not have available at the time safety glass was first produced in quantities.

By Mr. Smith:

Q. When was it first produced in quantities?

A. The first production of any safety glass in quantity was when we took on the Fisher Body Corporation.

Q. When was that?

A. That was in the summer of 1928.

By Mr. Christy:

Q. That is, as far as you know?

A. Yes, sir.

Q. State whether or not, assuming this blueprint, Exhibit "D," to have been properly proven, you were required to adhere to the exact dimensions which are shown on this.

A. We were required to adhere to those dimensions very, very closely.

Q. I notice on this print an arrow pointing to the corner of the windshield and the legend, "Sharp as possible." What does that mean?

A. In striking this arc across the bottom of this windshield you would arrive at a certain sharp point where it intersects the vertical line at the side of the windshield. What they wanted was to leave the shape of that point as near the original as possible. It had a bearing on the fit of this windshield on the seat already described.

Q. What bearing had that requirement upon the difficulties which you recited to Mr. Smith this morning of pressing these windshields in bags?

[fol. 368] A. Well, the corner of the windshield caused us the greatest trouble in the way of let-gos, because the action of the bag coming over the edge of the light of glass, as described this morning, was more acute when coming over a corner than when coming over a straight edge. The sharper the point the more extreme the pressure, the greater the extrusion of the celluloid, the more tendency to let go immediately following the pressing operation.

Q. If I have understood you, Mr. Clause, not only the windshields but the side lights of cars were given rounded edges as well. Is that correct?

A. Yes, sir.

Q. Why was that?

A. The automobile people require that all exposed edges be smoothly finished. The top edge of a door light or win-

dow of a car which raises and lowers must be ground and polished, and the two edges at the side where the glass travels in the channel must be smooth to slide in the channel.

Q. But why must the top edge be rounded?

A. I would think for two purposes: one to take the sharp edge off and the other to give it a good appearance.

By Mr. Smith:

Q. What would the sharp edge do if you left it on, Mr. Clause, and the window lights were lowered?

A. It would cut you.

Q. Cut your fingers?

A. Yes, sir.

Cross-examination.

By Mr. O'Shea:

* * * * * * *

Q. Now, you said you had this edging operation done by hand work, in the beginning, as I recall it, and for some [fol. 369] time after that, and it was this hand work which created most of the faults which subsequently resulted in defects?

Mr. Smith: I don't think he so testified.

Mr. O'Shea: I am asking him if he did.

Mr. Smith: You are incorporating that in your question. You are assuming an answer the witness did not make in my opinion.

Q. As I recall your testimony, Mr. Clause, you stated in the beginning you did this edge work by hand. Is that correct?

A. Yes, sir.

Q. And that it was this hand work that caused these astounding rejections?

Mr. Smith: Objected to as incompetent and irrelevant for the reason it incorporates in the question an assumption of a statement that the witness has not made.

Mr. O'Shea: I am asking him if he made it.

Mr. Smith: You should not incorporate an assumption of that kind.

Mr. O'Shea: I am not assuming anything. I am asking him if he so testified.

Q. I understood you to say that in the beginning of your operations the edging work was done by hand?

A. Yes, sir.

Q. And I understood you to further say that many of this astounding volume of rejections in the edging department were caused by this hand operation. Am I correct in that respect?

A. Yes, sir.

Q. When did you start the machine edging operation? [fol. 370] A. I don't believe I could supply you the exact date, but I don't think we had any automatic edging machines until probably 1929.

Q. What part of 1929?

A. Perhaps the early part of 1929.

Q. Would you call January the early part of 1929?

A. The first quarter, perhaps.

Q. That is, some time between January 1 and March 31st? Is that it?

A. I am giving that as the approximate time.

Q. Have you any records or data by which you could make it more specific?

A. I think Mr. Sherts could probably give you more specific information.

Q. Can you ask Mr. Sherts now?

A. Mr. Sherts believes we had our first automatic edging machine in the fall of 1928. That handled straight edges only and ground them only.

Q. And after you got those edging machines the losses in the edging department were substantially overcome? Is that correct?

A. No, sir.

Q. You still had large losses in the edging department?

A. Yes, sir.

Q. Then, were they as large as they were by the hand operation?

A. I could not answer without referring to records.

Q. Well, what was the purpose of putting in the machines? Was it to overcome these losses in the edging department, or something else?

A. The purpose of putting in the machines was to advance in the art of edging glass. There were edging machines for plate glass. The problem was to adapt them to the edging of safety glass.

Q. But they didn't help you out in your losses?

A. No, sir.

[fol. 371] Q. Caused by breakage and——

A. Not at the outstart.

Q. You still had the same relative large losses in the edging department caused by breakage in the edging operation that you had before, when you were operating by the hand process?

A. Yes, sir.

Q. Was the purpose of the machines solely to save labor?

A. I wouldn't say that, no.

Q. What other purpose than the saving of labor did it have?

A. The machine should put on a better edge than hand work and should do it with less breakage than hand work.

Q. I thought you said a little while ago there wasn't any less breakage, that you still had the same amount of breakage.

A. I said it should.

Q. But it didn't?

A. It did not.

Q. Did you have success in reducing these losses caused in the edging operation?

Mr. Christy: Mr. Master, I object to that question unless it is limited to the end of the accounting period.

Mr. O'Shea: All my questions are directed to the accounting period; nothing beyond that. I think much of the direct examination was directed to something beyond that, but my questions will be directed only to the period from January 1, 1928, to May 31, 1930, so with that understanding I repeat the question.

Q. Did you have success in reducing these large rejections in the edging operation during that period?

A. Very materially reduced them.

[fol. 372] Q. And how did you effect that reduction?

A. A great deal of it was brought about by the experience of the men. The same things that are the cause of many failures in the process today were also the cause of

many failu-es in the edging department. We sprang from a production of practically nothing to four thousand lights per day, had to expand and build in the edging department, bring in men who were more or less green in the edging game to handle a business of four thousand lights a day. Now, it is perfectly natural to start out on any such scheme with a green organization——

Mr. O'Shea: Let us not have an argument.

Mr. Smith: I think that is an answer to the question. He should be permitted to complete it, Mr. Master.

A. (Continued.) —with a green organization you are bound to have poor workmanship at the beginning which you would not have after a year or so operation. I will simply add that experience in any operation lends to perfection.

Q. I gather from your last answer when you were inexperienced in this business you had large losses in the edging department?

A. Yes, sir.

Q. And when you learned how to make this glass you materially reduced those losses?

A. Yes, sir.

Q. Now, Mr. Clause, you spoke of a time when you attained a production of four thousand lights per day?

A. Yes, sir.

Q. When did you attain that production?

A. Well, without referring to records which would show it, I imagine we were producing four thousand lights a day along in the latter part of August or September of 1928.

[fol. 373] Q. You were producing four thousand lights each day in September, 1928?

A. I say without referring to the records I can't tell you just when, but I know we got up to four thousand lights a day.

Q. Well, now, in the month of September, 1928, your books show total sales—total deliveries I suppose they mean—212,120 feet, 5 inches. That is for the month. How many lights would that amount to?

A. That would amount to some place between fifty and sixty-five thousand lights, depending on the feetage of the plate in question.

Q. Have you any idea what the feetage of the lights is?

A. I imagine it would be about three and one-half feet average.

Q. Each light would be three and one-half feet?

A. No, they would average that probably.

Q. So that you would have about 60,000 lights in that month, as I understand?

A. Yes, about 60,000 lights.

Q. Those were sales?

A. Yes, sir; shipments.

Q. Most of this business, of course, was done on an order business?

A. Yes, sir.

Q. You didn't stock? The character of the business was such you couldn't stock except to a very limited degree?

A. Limited amount.

Q. Now, in the cutting department, too, Mr. Clause—there we are speaking of cutting plain plate glass, are we not?

A. Yes, sir.

Q. The cutting department—that term as used on your books means the department where the single sheets of plate glass were cut? Is that right? I don't know whether [fol. 374] it is or not. We have spoken here of the cutting department as distinguished from the edging department?

A. That is the department where the plate glass was cut prior to lamination.

Q. The single sheets were cut?

A. Yes.

Q. There too your account shows large losses?

A. Yes, sir.

Q. And those were caused for what reasons?

A. There are several reasons entering into that. One that has no bearing on the question of actual breakage is that plate glass is sold in block sizes of even two inches. For instance, if you wanted a piece of glass that was 21 by 19, you would pay for a piece of glass, even though it came the size you asked, 22 by 20.

Q. Yes, I think that is pretty thoroughly covered in the testimony. Briefly it is this: whereby the customer paid for a bracket size glass, not for a specific size glass.

A. Yes, but there is one other point would have a direct bearing on this point.

Q. I just wanted you to know I think we all know the custom of this trade of the customer paying for a larger piece of glass than he actually gets.

Mr. Christy: I object to that. You give your own answer, please. We may have to modify Mr. O'Shea's statement somewhat later.

A. To be specific, in the cutting of this glass preparatory to laminating, you have got to have a fair margin to make the cut a direct and clean cut edge, and a clean-cut edge is essential to the operation so that you don't have vents start from the poor cutting. In other words, going back to the plate glass days when you cut glass to size you could use a pair of pliers and actually pinch the edge off where you [fol. 375] had only an eighth of an inch perhaps, or three-sixteenths or quarter of an inch to grip to cut it down to where it was scored. Such an edge resulting from that kind of pinching would not be satisfactory in the cutting of this glass to pattern where it went through this laminating process; otherwise, you would have more serious loss from the breakage of the finished article than the loss in the glass from the time you start. Therefore, if you took a light of glass—I will only take one dimension for example. For instance, the windshield, supposed to be 17⅞ or 17¾ inch light. You wouldn't start out with a block size eighteen inches. You would have to pay for the block size that was twenty inches because the quarter of an inch would not permit you to cut that to pattern and get a clean-cut edge. Therefore, it does not always result in every size but many sizes might have a very large percentage of loss which had no bearing on breakage whatever, to permit you to cut the pattern out of the block size. That was one item of loss. Then, the inexperience again, already referred to, was another item of loss in the cutting department. Those windshields which had the point on them are a very fragile article. When it gets down to seven-sixty-fourths of an inch the slightest touch of the man handling it, when he touches the table, snaps the corner, and the corner had to be sharp, not rounded as many windshields are called for today. In the transportation of this glass, still bearing in mind it was

seven sixty-fourths of an inch thick, that we have coming down to the plant——

Q. Let us keep to the cutting department, if I may make the suggestion.

A. I think in our bookkeeping arrangement the cutting department have assumed all loss until it was delivered down to the Duplate factory. In other words, they assumed all loss until it was delivered and ready to be examined down there preparatory to putting on the con-
[fol. 376] veyor. There was a large loss in transit of this glass going down there. It was an item that worried us extremely.

Q. Well, in these cutting department losses also, after your workmen got experienced, you again materially reduced the losses? Is that correct?

A. Yes, sir.

Q. And at what period in your production do you consider that you had experienced workmen?

A. I don't think we had really experienced workmen at the time we stopped producing for the Fisher Body Company.

Q. When was that, approximately?

A. I can't answer that.

Q. You were still producing for the Fisher Body Company in June, 1930, weren't you?

A. I can't answer whether we were or not. The records will show.

Q. Your books show shipments to the Fisher Body Company in May, 1930. It is true it is a relatively small amount, Mr. Clause.

A. That doesn't pertain to the large order then. That was division lights that we were able to make that apparently nobody else in the country could supply.

Q. And in September, 1929, your books show a delivery to Fisher of 100,000 feet. Would you call that a large order?

A. How many feet?

Q. 100,000.

A. In a month?

Q. In a month.

A. That is a fair order.

Q. Did you have experienced men by that time, do you think?

A. I will have to answer this way: relatively they were experienced as to the beginning, but as compared to our present efficiency, no.

[fol. 377] Q. So that up to September, 1929, your workmen had not yet obtained that degree of efficiency to keep down these losses?

A. No, sir.

Q. Now, with respect to the location of these respective plants of Duplate. You started in business and began sales approximately in January, 1928, did you not?

A. I think the company was formed between Christmas and New Year in 1927.

Q. Your records indicate sales in January and February, 1928, so that you were on the market selling to the public at that time?

A. Yes, sir.

Q. The glass that you were selling at that time was made in this first plant, as I understand?

A. Yes, sir.

Q. And that was located adjoining the Pittsburgh Plate Glass Company's plant?

A. Yes, sir.

Q. Immediately adjoining?

A. Yes, sir.

Q. Then, as I recall it, you expanded that plant some time later?

A. Made an addition to it.

Q. Do you know when?

A. In the summer of 1928.

Q. And then, some time in 1929, you discarded that plant and moved into an entirely new plant?

A. I think that was the very end of 1929.

Q. Now, I take it from an inspection of Defendants' Exhibit "C" for identification that some of the departments of Duplate were located within the Pittsburgh Plate Glass Company's plant?

A. Yes, sir.

Q. Noticeably, the cutting department?

A. Yes, sir.

[fol. 378] Q. The edging room and the packing room. Is that correct?

A. Yes, sir.

Q. Will you indicate on this Defendants' Exhibit "C" where the third plant or present plant of the Duplate Corporation is located?

A. It is located right down here. That may be there to indicate it. (Indicating.) It is the extreme left edge of the plan, Defendants' Exhibit "C" for identification.

Q. About how far away is that from the Pittsburgh Plate Glass plant?

A. I would say it was about 250 to 300 feet distant from the extreme left-hand end of the wareroom, and so located that we have passageway through a tunnel.

Q. Referring again to this Defendants' Exhibit "C" for identification, where was the glass belonging to Duplate Corporation stored before anything was done to it—plate glass?

A. You are referring to block sizes before any cutting was done?

Q. Yes.

A. It was stored here handy to the cutting department in the Duplate cutters department.

Q. And when it was stored there did it belong to Duplate Corporation or the Pittsburgh Plate Glass Company?

A. I think you would have to ask someone in the accounting department as to where the division was made in the wareroom of our plate glass factory.

Q. Well, it is testified to here already in the record that the system of purchasing glass was that an order slip would be sent to the Pittsburgh Plate Glass Company's factory. I assume from this exhibit that that testimony now really means that someone in the cutting department of Duplate [fol. 379] would send an order slip or something to somebody in the warehouse department of Pittsburgh Plate Glass Company and ask to have a certain footage, or a certain number of lights of block glass sent to the Duplate cutting department.

A. I believe that would be handled by the scheduling department of the Duplate Corporation.

Q. There wouldn't be much stored at the point marked Duplate Cutters Department on this Defendants' Exhibit "C," would there?

A. I would think not.

Q. In other words, the system would be that, since, because of the close proximity to the source, they would get it over to Duplate when and as they needed it within reason?

A. At times we carried a stock because of rush orders, but the stock would not be large. However, when we moved into the new building we then did carry quite a large stock of glass in the cutting department of that building.

Q. Then there was no large stock of glass in 1928?

A. I would say, broadly speaking, no.

Q. Now, I think you testified that owing to the distance and the conditions of the roadbed, particularly because they had to cross a railroad siding or track—in any event, that the jostling caused large breakage in the course of that transportation?

A. Yes, sir.

Q. Do you mean by that that you actually know that that large breakage was caused by that, or that you are assuming?

A. No, I actually saw it happen.

Q. And just what did you see happen?

A. Well, you would see when a truckload of glass was to be received down here at the Duplate factory, you would find these fragile windshields with a corner nipped off here, which is a loss of that plate from the standpoint of a Duplate windshield, or the glass would be scratched through [fol. 380] the fact one edge would rub on another to such an extent that you could not use it in the making up of a light of safety glass, which the term shrinkage covers in a way that breakage does not cover.

Q. Well, do you suppose that that breakage that you observed would amount in a particular month to 12,000 square feet?

Mr. Smith: Are you speaking now of breakage or shrinkage, as the witness testified? I object to the question. If this question is being put in the terms of shrinkage, I respectfully request the learned counsel to say so and not to confine it to breakage, which is part of shrinkage.

Q. Is there a difference between breakage and shrinkage?

A. Yes, sir.

Q. What is the difference?

A. In the glass industry we cover by the term shrinkage all defects in glass which cause it to be unusable. In other words, if you have a plate of glass and destroy the surface through a scratch, it is not broken, but from the standpoint of its usefulness it is shrinkage.

Q. There isn't much you can do in your raw stock to cause a shrinkage except either breakage or scratches, is there?

A. No, or bad bookkeeping—taking in and out of stock.

Q. I confess I don't know that. You mean you might have some losses in inventory?

A. Exactly.

Q. Going back now to the main question. We are referring now to breakage and scratches. Have you a positive knowledge that because of the defective manner of transportation that you have testified to that the glass so made [fol. 381] defective would amount in a month to 12,700 square feet?

A. I think that might be quite possible.

Q. How many carloads is that?

A. That is less than a carload.

Q. How much less?

A. A carload runs 15,000 feet or more.

Q. This thing is about 12/15ths or 4/5ths of a carload?

A. Yes, sir.

Q. And you think this transportation might cause as much as four-fifths of a carload in one month?

A. In the month we were discussing here some time ago, where you had 212,000 feet of duplate shipped, that means 425,000 feet of plate glass required to go into it. 12,000 feet on 425,000 feet isn't a terrific shrinkage.

Q. For breakage alone?

A. No, under the circumstances.

Q. Caused by this transportation?

A. Yes, sir.

Q. Have you answered my question that four-fifths of a carload in a month you wouldn't consider and did not consider as too much breakage and shrinkage because of this defective mode of transportation? Is that correct?

A. I don't like your question.

Mr. Smith: I object to your question as assuming that the method of transportation was defective, Mr. Master. We were doing the best we could with this new business.

Mr. O'Shea: I am assuming you were doing the best you could, but the witness testified the mode of transportation was such that it was one of the causes of what he refers to, or characterizes as astounding losses. I am asking him [fol. 382] whether he thinks this mode of transportation was not unusual.

Mr. Smith: The objection I offered was to your question in assuming that the method of transportation was defective. If, in this new industry and with these buildings located as they were, they were doing the best they could, I think it is not fair to insert in your question "defective transportation."

Mr. O'Shea: I don't want to do anything unfair, so I will put the question this way:

Q. Do you consider that a loss of 12,700 square feet of plate glass in a month was caused by your mode of transportation from one department of the Duplate Corporation to another department?

Mr. Smith: I object to the question as not properly laying a basis for a comparison or measuring of this loss unless it be shown, in addition to the number of feet lost, how many feet were handled or transported in this fashion. Do your books show that?

Mr. O'Shea: They are not my books. I am cross-examining. I don't have to lay any basis for my questions. You have laid the basis for my questions.

Mr. Smith: I think you should not put a question to the witness that is misleading in its effect, although it is not so intended I grant.

The Master: Answer the question, Mr. Clause, and we will determine later as to its materiality.

Q. (The previous question was read.)

A. Yes.

[fol. 383] Q. There is another item in another month of 118,200 square feet loss, which is designated on your books "Stock Loss."

Mr. Smith: I object to the question for the reason that the witness is not qualified to testify as to the books showing of the defendant's operation. He was called as a chief executive in charge of manufacture. He should not be cross-examined as to details of accounts. The question is objected to as improper cross-examination.

Mr. O'Shea: I am simply asking him if he thinks that mode of transportation would cause a loss of 118,000 square feet a month. That is perfectly proper cross-examination on his statement that your mode of transportation caused astounding losses.

(Question withdrawn.)

Q. Mr. Clause, do you think the mode of transportation from the cutting department to the next successive department in Duplate's process could cause a scratching or breaking of your raw glass to the extent of 118,000 square feet in a single month?

A. The breakage is a relative thing. I think to answer that, to be honest whether I thought so or not, I would have to know how much glass was transported.

Q. You couldn't answer that without knowing how much was transported? Is that your answer?

A. If I understood your question correctly.

Q. Well, is there any possibility that you misunderstood the question?

A. I don't think so.

Q. Would there be any connection between your shipments in a month and your deliveries from the cutting department to the next successive department?

A. There ought to be a pretty close relation.

[fol. 384] Q. Assuming in my previous question that you only delivered to customers in that month 77,800 square feet, do you understand my question now, Mr. Clause, fully and completely?

A. I would like to have the question repeated.

Q. Do you consider the particular mode of transportation from the cutting department of plate glass to the next successive department would cause a scratching or breaking of the plate glass to the extent of 118,200 square feet, and assume further that in that month you sold to customers 77,840 square feet of laminated glass, which of course would be 154,000 square feet of plate glass?

A. No, sir.

Q. You think that couldn't be possible?

A. No, sir.

Q. If it did happen, you, as manager of operations, what would you do?

A. I would investigate at once.

Q. What else would you do if you found it did happen?

Mr. Smith: I don't think we need go that far. Do you mean he would discharge someone? That is of no consequence in this case.

The Master: What are you getting at?

Mr. O'Shea: Why, if that be the case, they permitted it to continue for a period of two and a half years.

Mr. Smith: I object to that question as incompetent and irrelevant, being wholly immaterial what the witness would do if he discovered there would be unusual losses. I further object to the question because it incorporates statements of fact which are wholly opposite from the testimony.

[fol. 385] Mr. O'Shea: I say it incorporates a statement of fact which is in the record.

The Master: Answer the question, Mr. Clause, and I will decide later.

Q. (Question read.)

A. Why I think we would make a thorough investigation and depending on the facts disclosed we would act accordingly.

Q. Even to the extent of changing your mode of transportation, wouldn't you?

A. Yes, sir.

Q. Now, getting up to the pressing department, Mr. Clause. In the beginning you operated with this rubber bag process, as I recall it?

A. Yes, sir.

Q. And thereafter you went to the autoclave process?

A. They are both autoclave processes.

Q. One is where the rubber bag is put into the autoclave and the other is where the naked laminated glass is put into the autoclave? One where the rubber bag enclosing the laminated glass is put into the autoclave and the improved process is where the naked laminated glass is put into the autoclave?

A. Yes, sir.

Q. Let us call one the rubber bag process and the other the autoclave process, unless you have some better terminology for the distinction.

A. That is all right.

Mr. Christy: I would suggest you call the second the preliminary pressing process.

Q. Now, in the rubber bag process how long did you keep that up in your factory?

A. How long did we employ the process?

Q. Yes.

A. We employed the process up to and including a short time after we moved into the new plant.

[fol. 386] Q. What would you consider a short time? Was that a month?

A. I think we changed some time in the first quarter of the year when we moved in there.

Mr. Smith: Mr. Sherts will be on the stand and you can question him about that.

Q. Well, in the first quarter of 1929. Is that it?

A. No, we didn't move into the new plant the first quarter of 1929.

Q. How long did you keep the rubber bag process in operation in your plant?

A. Some time in the first quarter of the year 1930, I think.

Q. And after that you put the preliminary pressing process into operation?

A. Yes, sir. The preliminary pressing process was working in part, however, during the last end of the rubber bag process.

Q. And by the preliminary pressing process you again effected a substantial decrease in these rejections and so forth?

A. Yes, sir.

Q. Mainly due, as I recall your testimony, because of the defect in the rubber bag process of the edge over pressure, which resulted in a let-go in the final product?

A. Yes, sir.

Q. Now, did you state that the Cadillac people particularly objected to the pitch method of sealing the edges of these windshields?

A. Yes, sir. I didn't state they objected to the edge sealing. They objected to the appearance of it.

Q. I say one of their objections was directed to the sealing effected by the pitch process of sealing because it came in the line of vision when it was raised?

[fol. 387] A. Yes, sir.

Q. And that objection was caused because of the black line produced by this pitch process of sealing?

A. Yes, sir.

Q. Now, in the latter part didn't you sell to the Cadillac and La Salle sealed windshields that had a black line at the bottom?

A. No, sir.

Q. You never sold any of those?

A. No, sir.

Q. Or to Chrysler?

A. Not during that period.

Q. Or to any other manufacturer?

A. We are now selling some sealed and some unsealed glass, but during the time we are discussing here we sealed no glass.

Q. The objection which the manufacturers had to that black line was withdrawn?

A. Not in all cases.

Q. In some cases?

A. Yes, in some cases.

Q. This sealing process has the effect of decreasing the come-away of the two pieces of glass, has it not? That is its purpose?

A. Yes.

Q. And you didn't put that into your process for some time after you began?

A. We didn't start to put it in until the latter part of last year.

Q. Only the latter part of last year?

A. Yes, sir.

Q. Most of the other manufacturers of laminated glass were using this sealing process, weren't they?

A. Yes, sir.

Q. All during this period 1928, 1929 and 1930?

A. Yes, sir.

[fol. 388] Q. Did you have any particular reason for not adopting it other than this one objection from Cadillac and La Salle?

A. We sincerely believed ourselves it was not necessary if the product was made properly.

Q. But you finally came to the conclusion it might have a good effect?

A. Where glass is installed in a frame, where it is subject to moisture at all times.

Q. And you adopted the sealing in your process only recently?

A. The latter part of 1931, and only on part of our product.

Q. Mr. Clause, when did you obtain your first Fisher Body order?

A. I think we started into production—when we actually obtained the order I couldn't give you the date, but I think we started into production on that order about April or May of 1928.

Q. So that you were soliciting them for business prior to that time I assume?

A. That must be so.

Q. I think you also stated in your direct examination that some time in or about the spring of 1928 you induced the Fisher Body Company to adopt duplate as standard equipment. Am I correct in that statement of yours?

A. Yes.

Q. Will you please tell us what the inducements were that you offered to Fisher Body Company.

Mr. Christy: I object to that as improper cross-examination, your Honor. This witness has not been examined as having anything to do with the sales department.

Mr. O'Shea: He testified that they induced Fisher to adopt this as standard equipment.

[fol. 389] The Master: Objection sustained.

Mr. O'Shea: Exception.

Q. Now, you were familiar, were you not, from your reports from your factory superintendents and so forth as to your costs of making laminated glass during all of this period?

A. Yes, sir.

Q. You knew what your costs were?

A. Yes, sir.

Q. Were you in communication with Mr. Fisher and Mr. Judson during this period?

A. I wasn't in communication with Mr. Fisher.

Q. I mean Mr. Higgins, the vice-president.

A. Yes, sir.

Q. And Mr. Judson?

A. Yes, sir.

Q. Mr. Higgins was an officer of Duplate Corporation as well as an officer of Pittsburgh Plate Glass Company?

A. Yes, sir.

Q. And you were an officer of both companies also?

A. Yes, sir.

Q. Who made the selling prices, do you know?

A. I judge Mr. Higgins did.

Q. Did you have any conversations with him with respect to these selling prices of this product?

A. Not at the time he went to the Fishers.

Q. At any time during this period from January, 1928, to May 31, 1930?

A. No doubt I did.

Q. Did you tell him what your costs were in those conversations?

A. I think he was as familiar with those costs as I am.

Q. You mean he got reports through you or——

A. Direct.

[fol. 390] Q. Knowing what the costs were during all this time?

A. Yes, sir.

Q. Did you tell him about these astounding losses?

A. We were all familiar with those.

Q. You were all familiar with them?

A. Yes, sir.

Q. Are you familiar with the fact that you had losses upon examination of raw pyralin to the extent in some months of 44,000 square feet and 53,900 square feet?

A. I will have to ask you what you mean by losses. Are these stock losses or are they losses that had to be thrown aside as not satisfactory to be used in the product we were making?

Q. Well, at the risk of having my statement to you objected to, I will tell you that your Schedule "J" indicates that in the month of August, 1929, there was a loss in pyralin to the extent of 44,000 square feet, which is called in Schedule "J" shrinkage, and another loss in the succeeding month of September, 1929, of 53,900 square feet, which is called in Schedule "J", "Loss Examining."

(Above question read as follows: Are you familiar with the fact that you had losses upon examination of raw pyralin to the extent in some months of 44,000 square feet and 53,900 square feet?)

A. Yes, sir.

Q. Well, do you know what those losses were occasioned by?

A. Well, I think I know.

Q. Don't let us have it if you only think it. You either know it or don't know it.

Mr. Smith: He is entitled to give his opinion if you want it. That is all he can give.

[fol. 391] Mr. O'Shea: I am asking if he knows what caused the losses; not what he thinks caused the losses.

Q. You think you know?

A. Yes, sir.

Q. All right, tell us.

A. We thought the safety glass game was going to be a good deal larger than it was, and to be prepared we ordered tremendous quantities of pyralin from the du Pont Viscoloid Company because it looked as though they were not going to be able to supply us. In fact, there was so much pressure brought upon the du Pont Viscoloid Company to increase their output of pyralin that we had very unpleasant sessions. So, as the result, and to safeguard ourselves we ordered pyralin in stock sheets of 20 x 50 inches, which when applied to the orders we received from the automobile companies may or may not cut up to good advantage. We obligated ourselves to take this. They produced it. We obligated ourselves to take it and once having it, we had to use it. It was about this time, I think, that the change in sizes or the business fell off, so we felt we had to go in and use that pyralin up before it deteriorated, and applying the sizes of duplate we had to make from those stock sheets we sustained a very material loss.

Q. Du Pont was a co-organization with your company—with the Pittsburgh Plate Glass Company and Duplate Corporation, was it not?

A. Yes, sir.

Q. Had a fifty per cent interest?

A. Yes, sir.

Q. Granted special prices to its quasi subsidiary, Duplate Corporation?

A. I don't know what consideration was given in that respect, but something I believe.

[fol. 392] Q. This laminated glass business wasn't a new business in January, 1928, was it?

A. Wasn't a new business?

Q. Yes.

A. No; no, sir.

Q. The Safetee Glass Company of Philadelphia had been making laminated glass for a good many years, had it not?

A. Yes, sir.

Q. The plaintiff in this case had been in the laminated glass business for a period of two years before 1928?

A. Something like that.

Q. Some considerable period?

A. Yes, sir.

Q. You had been selling glass to the plaintiff in this case during that period from 1926 up to 1928, had you not?

A. Yes, sir.

Q. And the du Pont people had been selling pyralin celluloid or pyralin, to both the Saftee Glass Company over a long period of years and to the Duplate Corporation over a period of time after they went into the business?

A. I know they sold us.

Q. You don't know whether they sold anybody else?

A. No, sir.

Q. Mr. Sherts never told you——

Mr. Smith: Objected to as incompetent and irrelevant and not proper cross-examination.

The Master: Objection sustained.

Mr. O'Shea: Exception.

Q. Did you ever have any conversation with Mr. Sherts as to whether the du Pont people ever sold pyralin to Saftee and Triplex?

[fol. 393] Mr. Smith: Objected to as incompetent and irrelevant and not proper cross-examination.

The Master: Objection sustained.

Mr. O'Shea: Exception.

Redirect examination.

By Mr. Smith:

Q. Mr. Clause, I refer to Defendant's Master Exhibit "D", being the print which I understand shows a windshield. As I understood it, you were using that print for the purpose of illustrating to the Master the difficulties in making this windshield. Is that correct?

A. Yes, sir.

Q. Would it make any difference at all in the use of that illustration whether the illustration as drawn in this exhibit were a safety glass or a plate glass?

A. None whatever.

Q. And would your testimony be in any way changed if it should appear that this exhibit was a copy of a plate glass windshield instead of a copy of a laminated glass windshield?

A. No, sir.

Q. And did you or did you not—the Duplate Corporation—furnish to some of your customers windshields which were cut in substantially the same manner shown by this Defendants' Exhibit "D"?

A. We did.

Q. Now, I want you to be very brief about this to enlighten my ignorance upon another point, because I am not an expert on this. We will suppose this yellow paper on this scratch pad is a plate of laminated glass.

A. Yes, sir.

Q. And we will assume that you wanted to cut out a windshield from that plate of the dimensions which I have [fol. 394] sketched on there in pencil. Now, I have endeavored to leave a margin of a couple of inches around here between the edge of the windshield and the outside edge of the glass. I think you said that in cutting plate glass you could operate by leaving a margin of only a quarter of an inch or half an inch around the edge of the sides of the windshield?

A. Yes, sir.

Q. Why couldn't you do the same thing with this laminated glass?

A. Because if you cut a piece of plate glass with a very small margin around it, you have to use a pair of pincers to nip the glass off up to the point where it is scored, and in doing that you form a ragged edge. In employing glass for the purpose of making safety glass, it is essential you have clean-cut edges all the way around. Other than a clean-cut edge will be the cause of a vent starting in the operation.

Q. Now, on this little model I have made here the lead pencil line would indicate the line that was scored by your diamond tool, or whatever you used?

A. Yes, sir.

Q. In your practice when you used pincers to break off the selvage on the outside, was that satisfactory or not with laminated glass?

A. The thickness of glass used in laminated glass you don't have to use pincers. You can use your fingers it is so thin, but you must have sufficient margin to get the leverage to make a clean break.

Q. Supposing there was a margin of only a quarter or half an inch around the outside of this windshield, could a man break it off with his fingers without leaving slivers around the edge?

A. He might use a pair of plyers on a quarter of an inch to get it cut off.

Q. If he used pincers on a quarter of an inch selvage, would that or would it not mean fractures along the edge? [fol. 395] A. With skilled men they might; unskilled men could not.

Q. Did your men at this time have the skill to do that?

A. No.

Q. How much of an edge did they require in your opinion?

A. I think we allowed an inch at all times.

Q. Do you think you needed that much?

A. Experience since that has proved we did not.

Q. At that time and with that skill, did you need that?

A. I think we did.

Q. And by that method you would lose this inch of glass broken off around the edge?

A. Yes, sir.

Q. State whether you think there was less loss losing that dimension of glass than you would have had with fractures around the edge with lower margin.

A. We took every precaution we could because the loss in duplate when you get a sandwich of two lights of glass and celluloid is a complete loss. The loss in glass at this point is not nearly as serious as the loss in a finished article.

Q. Therefore, as I understand, you thought your method at that time, with the skill of the men, was a proper method?

A. Yes, sir.

Q. Leaving this size margin?

A. Yes, sir.

Q. And it was more economical than leaving a narrower margin, was it?

A. Yes, sir.

Recross-examination.

By Mr. O'Shea:

Q. The mere fact of breaking this selvage off around here didn't occasion you any loss, did it, for the reason that the [fol. 396] customer paid for the size depicted on the outside, that being the bracket which the customer paid for and you cut it down to a lower bracket?

A. I think I explained that before, saying it might or might not. For instance, if the customer's finished piece of duplate, we will say, was seventeen and seven-eighths or seventeen and one-half, that could not be cut out of an eighteen-inch bracket. Therefore, you had to start out with a twenty-inch bracket.

Q. And if you did, the customer paid for a twenty-inch bracket?

A. No, the customer paid for an eighteen-inch bracket.

Q. That is a very extreme case?

A. I admitted——

Q. In most of the cases, except those extreme cases, the customer paid for the bracket which included the selvage?

A. Yes, sir.

By Mr. Christy:

Q. Mr. O'Shea says that was an extreme case. Is that strictly true?

A. I don't know that was an extreme case.

By Mr. O'Shea:

Q. I wasn't addressing myself to the question of whether there was any loss as between your company and your customer in what the company was paid for the glass. I was talking about the loss, as an economical manufacturing operation, of having to take off these wide edges, and I understood you testified correctly on that subject. If you could have used a smaller selvage, we will say, around these windshields that you were cutting down, that would have

made a more economical operation because there would have been less glass broken off?

A. Yes, sir.

[fol. 397] Q. I mean economical in the sense of what glass you were using and if it were possible to do that, you could have passed that on to your customer?

A. Yes, sir.

Q. Furthermore, if you broke off one of these edges where you didn't leave enough margin for breaking, and you cracked your plate of glass, what would be the result of that?

A. You would have to cut the remaining piece of glass down to the next largest size you could use.

By Mr. Christy:

Q. Refer again to this blueprint marked for identification as Defendants' Exhibit "D," which has written on it, "Block size, 16 x 46." The actual dimensions, the largest dimensions, are 45 17/32 by 15⅛. Does that mean that the customer is to be charged for a block size of 16 by 46, according to that blueprint?

A. Yes, sir.

Q. Now, in cutting glass for duplate could you cut as close to that block as that?

A. We could today.

Q. Could you at that time in 1928?

A. I don't think we did.

Q. But you could only charge your customer 16 by 46? Is that right?

A. Yes, sir.

By Mr. O'Shea:

Q. Well, do you know, Mr. Clause, whether you did cut, at the time of this accounting, out of those block sizes and charge the customer for them?

A. I would have to honestly say no. You would have to talk to the man from the cutting room.

(Adjournment taken until Thursday, January 28, 1932, at 10:30 o'clock A. M.)

[fol. 398] Thursday, January 28, 1932.

Met pursuant to adjournment.
Counsel present as before.

J. H. SHERTS, a witness produced on behalf of the defendants, having been duly sworn, testified as follows:

Direct examination.

By Mr. Smith:

Q. Mr. Sherts, where were you born?
A. Lancaster County, Pennsylvania.
Q. And where did you get your education?
A. At Franklin-Marshall College, Lancaster.
Q. Prior to that I suppose you went through the common schools?
A. Through the common schools and Millersville State Normal School, Pa.
Q. Franklin-Marshall College is in Psnnsylvania?
A. Lancaster, Pennsylvania.
Q. Did you graduate there?
A. I did.
Q. In what year?
A. 1915.
Q. What course did you take at Franklin-Marshall?
A. Scientific course, majoring in chemistry?
Q. What degree did you receive on graduation?
A. Ph. B.
Q. Meaning?
A. Bachelor of philosophy.
Q. After leaving college did you go to work for the du Pont people or at least some time after leaving?
[fol. 399] A. Taught school one year and then joined the du Pont Company in 1916.
Q. At what plant of the du Pont Company?
A. The du Pont Powder Plant Company, Carney's Point, New Jersey.
Q. How long did you work for the du Pont Company before you became an employee of the du Pont Viscoloid Company?
A. From June 10, 1916, to February, 1919.

Q. Where did you go in February, 1919?

A. I was transferred to the Pyralin Plant of the du Pont Company at Arlington, New Jersey, which was later called the du Pont Viscoloid Company.

Q. And what practical experience did you have, just in general, not in detail, while working for the du Pont Company before you came to Pittsburgh?

A. In the powder plant I was a general chemist; first did routine work on analyzing powder and ingredients going into its manufacture; later was put in charge of their general analytical room, and after that was put in charge of installation and starting of three water filter plants. About that time I was transferred to Arlington.

Q. In the installation of these filter plants did you have any experience out on the ground?

A. That was altogether out on the ground. For approximately a year we had the problem of about five different sources of water, each requiring different kinds of treatment and equipment as they were used for different purposes, and that kept me out on the plant continuously, as the plant was about three miles long and the filtering plants were distributed.

Q. Was this filter station used by the du Pont plants?

A. It was.

Q. I mean you were looking after an installation for the company itself?

[fol. 400] A. Yes.

Q. When you went to the Pyralin Plant at Arlington, what were your duties there, briefly?

A. I was put in the color laboratory where we made the various colors and developed the formulas and made all the new kinds of celluloid, and in order to do that my first experience was approximately six months of actual operation on the plant. During that time I took the part of a laborer and worked on every operation from the beginning of the manufacture, including the acid, the alcohol, camphor, refinery, rolling, caking, pressing, cementing, sheeting—every operation of a manual nature through the plant.

Q. That plant was producing pyralin?

A. Yes, sir.

Q. The same kind of stuff that was later used in making this laminated glass?

A. Yes, that is correct. After doing that work, I was made manager of the industrial research division, the duties of which were to solve problems of manufacturing nature and to improve the qualities of our present product and extend its uses in the field, and at that time I had about twelve technical men constantly at work in various parts of the plant, including the articles division, on practically every phase of mechanical, chemical development, including efficiency.

Q. These twelve men were working under your orders?

A. Yes, sir.

Q. In doing that work did you stay in the office, if I may use that expression, or did you work out in the plant as well as the office?

A. We had an office for the records, but all the work was done in the plant, so I would say 90 per cent. of my time was out with the men right on the problem.

[fol. 401] Q. And seeing the actual goods produced?

A. Yes, sir.

Q. When did you come to Pittsburgh?

A. I came first in December, 1927, to discuss the problem of manufacturing safety glass in a general way, and was transferred officially as of February 1, 1928. During January I made several trips to consult on the problems of starting a new factory.

Q. Up until January, 1928, and for some time thereafter you were still in the employ of the du Pont Viscoloid Company?

A. That is correct.

Q. Now, do you live in Pittsburgh?

A. I live in Brackenridge, Pennsylvania, which is about two and a half miles from Creighton where the Duplate factory is located.

Q. You first came to Pittsburgh in connection with this safety glass business in the latter part of 1927, was it?

A. That is correct.

Q. And what did you do then?

A. At that time we had a meeting in the city office where I related to the Pittsburgh Plate Glass officials and technical men, experience I had had in connection with the manufacture of laminated glass, as we had done a considerable amount of experimenting at Arlington in our industrial research division. I had one and sometimes two men

working on this problem practically all of their time for some time before I was called out here.

Q. You need not give the detail of that conversation but it was looking toward the establishment of this plant in which the du Pont Viscoloid Company and the Pittsburgh Plate Glass Company were joint owners on the basis of 50 per cent. each?

A. That is correct.

[fol. 402] Q. Then did you subsequently enter that plant of the Pittsburgh Safety Glass Company, I believe it was called?

A. I did.

Q. When did you enter the plant?

A. On February 1st.

Q. What year?

A. 1928.

Q. Mr. Sherts, I show you a photograph in which one of the most prominent objects is what looks like a cylinder standing on its end.

A. Yes, sir.

Q. Will you please tell the Master what room that photograph shows, and whether it shows it correctly, and what these devices that are seen here are? I don't mean all of them, but I want you to point out the autoclave and press and so forth.

Mr. O'Shea: I object to the materiality.

Mr. Smith: As I understand, you don't object to the use of the photograph itself?

Mr. O'Shea: No, the materiality.

The Master: We will take it subject to that objection.

A. This is the laminating room. This little room here is where the celluloid was sprayed and the celluloid and glass laid together, and they come out on this conveyor into the bag loading room. This is the original autoclave that I sent out here from Arlington. We had set up and used it some in there. This is the platen press. Mr. Lytle had been working on the platen press method. We set them up together in the early stages to see which one under practical test was the most efficient.

Q. Was this room a part of the original plant of the Pittsburgh Safety Glass Company?

[fol. 403] A. It was.

Q. As it was in the early part of 1928?

A. That is correct.

Q. What kind of a roof or ceiling was it?

A. They were rafters with one-inch board roof and tar paper top. The rafters were covered with whitewash.

Q. I show you another photograph in which there seems to be a large number of people working, one in the center of the photograph, a man with his back toward us as we look at the photograph, and there seems to be a good deal of liquid on the floor. Will you tell the Master what that is?

A. That is the bag loading room and the laminating part of the factory, the same room we saw in the other picture. The experimental presses were right here. This is the autoclave rack and the rubber bags upon it pushed into the autoclave. When it is pulled out of the autoclave naturally a lot of water stays on the bags. As they are pulled off the rack that water falls on the floor.

Q. Is that what this wet indication on the floor is in the photograph?

A. Yes.

Q. This mechanical device that is prominent here. Is that the autoclave or the autoclave rack?

A. That is the autoclave rack.

Q. That is the thing which carried the bags and which was shoved into the autoclave?

A. That is correct. Here is another one.

Q. On this table where two men are working, one with his back toward us as we look at the photograph, what are those articles that are shown on the top of the table?

A. The man with his back toward us is pulling a package of laminated plates wrapped in cloth from a bag which is [fol. 404] being held by an operator on the opposite end of the table.

Q. Is that rubber bag one of the rubber bags that was used in this autoclave method of making laminated glass at that time?

A. That is correct; it was.

Q. This photograph shows the ceiling of the room?

A. It does.

By the Master:

Q. Mr. Sherts, are those photographs in further explanation of the diagram that was referred to yesterday in the process of the manufacture of laminated glass?

A. This diagram shows the conveyor and the photograph shows the room into which the conveyor discharges the glass to be put into the bags. It is all in one big room except that conveyor room is a small enclosure in the big room.

By Mr. Smith:

Q. Will you please state whether or not these two photographs which you have explained to the Master show the conditions as they were on the ground with substantial accuracy?

A. They do. They were taken as a matter of interest at a later date as we standardized and were taking pictures from time to time just for historical interest.

Q. Were you sent by the du Pont Viscoloid Company to this plant to assist in these operations of making this laminated glass?

A. I was.

Q. And did your duties require you to stay permanently at the plant while you were working? That is, you didn't go back and forth to New Jersey or some other point?

[fol. 405] A. I didn't move my family at once, and for several months I went back to Arlington occasionally.

Q. Spent most of your time here in this plant?

A. Yes, sir.

Q. When did you move your family to this neighborhood?

A. We moved here in June, 1928.

Q. And have been here ever since?

A. Yes, sir.

Q. Now, when you came to work in that plant in 1928 as an employee of the du Pont Viscoloid Company, had there been any experiments made in producing laminated glass by a process other than the autoclave?

A. Yes, sir.

Q. What were they?

A. We tried to manufacture by the platen press.

Q. What was that, just briefly?

A. That is a rigid hydraulic press with flat plates which are heated by steam, and it is operated by pressing the plates together so anything put between the plates would receive pressure and heat.

Q. How were the materials arranged before you put them in this press for pressing into laminated glass?

A. We cleaned the glass and sprayed it with the cement and put a piece of celluloid between two sprayed pieces of glass, and put blotting paper or ruber to cushion this glass —a piece of cushion above and below—and placed the package between the platens.

Q. And then applied the pressure?

A. Yes, then applied the pressure.

Q. Now, the other method you were experimenting with is the autoclave method, and were you here when Mr. Clause testified yesterday?

A. I was.

[fol. 406] Q. Did he describe that method with substantial accuracy?

A. Yes, he did.

Q. Well, now, did you make comparisons between these two methods of producing this glass experimentally—that is, as between the platen press method and the autoclave method?

A. We did.

Q. What was the result of those experiments?

A. At the time we had to make a decision whether or not to put in platen press equipment or autoclave equipment we were able to get a very much better yield in the autoclave process than by the platen press process. As I recall, the platen press frequently ran a breakage and shrinkage of approximately 35 per cent., and after taking all factors into consideration, our engineers, our production superintendent, and Mr. Lytle and myself, who were technicians on the plant, we agreed that the best process to adopt was the autoclave process.

Q. And you did adopt it?

A. We adopted it.

Q. Do you remember how many autoclaves you installed at the beginning?

A. Until about May we had only the small autoclave shown in the picture, which is approximately 60 inches long and 24 inches in diameter. About that time we installed a larger autoclave approximately five feet in diameter and twelve feet long. About August we installed and completed installation of the second large autoclave similar to the one just described.

Q. In manufacturing laminated glass using celluloid as the medium of adhesion and reinforcing, does it make any

difference as to the cleanliness of the room—freed from dust and so forth—where this operation is carried on?

[fol. 407] A. Very materially so as the final product has to meet certain specifications, which as near as possible correspond to plate glass. Our product is to be used as a substitute for plate glass, which is free from defects of that kind.

Q. You were making your product out of sheets of plate glass plus the celluloid?

A. Plus the cement.

Q. I mean it was a plate glass product that you were making in the sense that the glass you used was plate glass, not window glass?

A. Practically.

Q. Is that right?

A. Yes.

Q. What about sheets of celluloid with respect to gathering dust or lint or things of that kind?

A. A sheet of celluloid has a high dielectric factor and, as such, is charged with static electricity. It is, therefore, almost impossible, or was at that time, to remove foreign particles such as lint by a rubbing process. It was the frequent experience to see them fly right back on the sheet again after they were removed, and in a room where dirt could not be kept from entering, a sheet simply attracted all loose or floating particles from the atmosphere to its surface.

Q. Did the fact the sheet carried an electrical charge have something to do with that?

A. It did.

Q. Much or little?

A. All; practically all.

Q. You mean to say it had a great deal to do with it?

A. It had.

Q. What kind of a plant was this you were operating in in the early part of 1928 with respect to its proper designing and its proper facilities for an operation of this kind?

[fol. 408] A. It was a building that was used previously for storage materials, and as such no consideration had been given to the structure, the painting, and means of keeping it clean. For this reason the rafters were exposed, had been whitewashed; the doors were loose, and

most everything about the building was contrary to prevention of dirt or elimination of dirt.

Q. Did you endeavor to keep the dirt out the best you could?

A. We went so far as to build a separate room in which we filtered the air, sometimes triply filtering it, in order to keep the dust out of that department. We had our employees wear uniforms, wouldn't permit anyone in that department except foremen, actual operators, and we did everything that we could conceive of to keep the contaminating influences from getting into our product.

Q. When did you build that separate room where you filtered the air?

A. That was built about April, 1928—maybe March.

Q. Now, what was the size of the original plant before you built any addition to the room? I mean the plant of the Safety Glass Company.

A. It was approximately 60 feet wide by 140 feet long.

Q. I show you Defendants' Master Exhibit "C." Does this show the lay-out as it was on the ground, Mr. Sherts?

A. It does.

Q. Now, there is a large enclosure, apparently, which I would say is a rectangle except there seems to be a small corner out of it. What does that represent?

A. That represents the plate glass factory.

Q. Is that what is known as the Creighton plant of the Pittsburgh Plate Glass Company?

[fol. 409] A. It is.

Q. Now, the original laminating factory is so indicated on this plan?

A. It is.

Q. And next to it is this annex, which appears to be completed by a legend here, September, 1928. Is that the additional room you spoke about?

A. No. That is an addition to the factory. The air filtered room I spoke about is located in this building.

Q. In this area that is marked "Original Laminating Factory"?

A. That is correct.

Q. Where were the sheets of plate glass delivered to the Duplate Company's cutters?

A. At this area marked "Duplate Cutters."

Q. Now, from that point on the Pittsburgh Safety Glass Company, as it was then, and later the Duplate Company, and I will call it by that name throughout—that company took charge of the sheets of plate glass at that point?

A. It did.

Q. And the glass was cut by the Duplate cutters at that point?

A. It was.

Q. And then what was done with it?

A. Then it was put on "A" racks and hauled by hand truck at first to the upper end of the plate glass factory, approximately one-third of a mile.

Q. That is, from the cutting point to the laminating factory?

A. To the end of the plate glass factory.

Q. As shown on this plan?

A. There it was transferred from the "A" racks and carried by hand over to this point in bundles.

Q. I think you said approximately a third of a mile where you meant approximately a fifth of a mile. Is that right? [fol. 410] A. That is correct.

Q. 1060 feet it appears from this plan.

A. That is right.

Q. The distance of 1060 feet shown on this plan is from the end of the part of the building marked "Duplate Cutters" over to a line which would be the projection of the nearest end of the original laminating factory?

A. That is correct.

Q. Then the glass was carried by hand for some distance?

A. It was.

Q. Into the building marked "Annex to Original Laminating Factory."

A. At that time the annex wasn't here and there was no way of trucking it across here, so the operators would take as many plates as a man could carry in his hands and carry them across into the laminating factory and put them in another "A" rack there.

Q. Just so as to complete this "A" rack business before I go into the process, after the glass was laminated in the laminating factory where was it taken?

A. It was again carried back across the tracks and put on an "A" rack in the plate glass factory and conveyed on the "A" rack back to the edging room.

Q. Subsequently was there any roadway or similar arrangement made by which the glass could be trucked from the laminating factory to the edging room?

A. After carrying it by hand we purchased an electric truck which would pick up an "A" rack, and was so constructed that it could carry the rack along the road. Then we carried it along this slag road from the cutters to the laminating factory and back again until the period at which time the annex to our factory was completed, and at that time we put a roadway of planks connecting the annex with [fol. 411] the Pittsburgh Plate Glass factory and then began to haul the glass by truck through the Works 1, as indicated by the green line.

Q. Well, in either case, when you were operating by trucks, whether you went over the outside roadway or through the plate glass factory, you had to cross this railroad siding?

A. That is correct.

Q. And there were how many tracks?

A. There were two tracks.

Q. That is, each track consisting of two rails?

A. That is correct.

Q. Did you build up a plank roadway to make the crossing over the railroad tracks as smooth as possible?

A. We did.

Q. Mr. Sherts, I show you this photograph which in the center seems to have a motor truck of some kind with a rack on it. What does that photograph show?

A. That is the "A" rack, called "A" because of the "A" shape, on the motor truck to which I referred which slides under the rack and lifts it off the ground and conveys it.

Q. And was that the kind of a rack and kind of a truck you used in this operation?

A. It was.

Q. Did you have a number of these?

A. We had several trucks at one time, and probably a hundred of those racks.

Q. Did you know of any better way to handle the glass in bringing it from the Duplate cutters to the laminating factory and back to the edging department than the method you did use?

A. We did not. That is standard with the glass people throughout the industry.

Q. And just to finish this point, after the laminated glass was completed in the edging room what was done with it? [fol. 412] A. It was taken to the packing room where it was held until sufficient glass accumulated to fill an order, at which time it was packed and put in the cars and shipped right from that room.

Q. Is that packing room in the warehouse of the Pittsburgh Plate Glass Company?

A. In their shipping room.

Q. At the time you began operations, in the early part of 1928, why didn't you stop and build a proper plant for this before you made any glass?

A. It is impossible or impractical to stop when you contracted to supply such large automobile accounts as we undertook to supply.

Q. Did the Duplate Corporation or its predecessor have large contracts for laminated glass at that time to fill?

A. Not originally, not in the early part of the year.

Q. Did they get some thereafter?

A. I should say the large contracts were received in May.

Q. Well, were you looking forward to such contracts in the early part of the year?

A. As a technical man, at that time we believed that we would have a year to prove the best possible method of making it and to work out the difficulties. We thought we could make it with the small equipment which had a capacity of a few hundred lights per day.

Q. But then these orders came on to be filled before you had the year for experimenting?

A. Yes, sir.

Q. And what did you do in the matter of stepping up your working forces to meet these contracts?

A. We simply had to place orders for equipment and for labor and for other organization men in the quickest possible way and under very forced circumstances.

[fol. 413] Q. What was the condition of the labor market early in 1928? Was there a good demand for labor, or was business slack?

A. At that time in our section business was flourishing and there was a decided shortage of labor particularly of a dependable type.

Q. Were you able to secure a competent personnel in the way of labor and so forth at the start?

A. We were not. Most of our men were either young men that had never had any experience as workmen, or they were the men who were not found desirable by the glass and the steel and aluminum works in our valley.

Q. And had been let go by those other works in some cases?

A. A very great many cases.

Q. Did the quality of labor you had to use affect your product in any way?

A. It did, particularly in night-shift work, as not only the labor was poor but our supervision was extremely poor. We had to put men in the capacity of supervisors who had only had a very limited amount of experience as helpers in that early stage of experimenting with the autoclave and the press.

Q. Did you have to work night-turn?

A. Steady night-turn, Saturday and Sunday, and the only day taken off, as I recall, except for breakdowns was on the 4th of July.

Q. How long did you work at that speed—all of 1928?

A. Practically all of 1928, although records would have to prove exactly. I just know we were putting forth every effort we could. All of us who knew anything about it were down there day and night, trying to help out on the problems, and my general impression is we were working day and night practically all that time.

[fol. 414] Q. Was it a difficult or easy matter to organize this industry and get it going?

A. It was very difficult.

Q. What have you to say as to whether or not your company was pioneering in this autoclave method of making glass in commercial quantities? I mean by that quantities sufficient to take care of orders of automobile concerns.

A. I think we were pioneering, absolutely, as we were undertaking the problem on a very different basis from anything we had ever heard or seen, and in addition to the laminating we were required to furnish a trade that had herefofore not been supplied with this product, and their specifications were much tighter than we had anticipated. Undertaking autoclave pressing on a large scale, problems arose which could not be foreseen, and developments had to be made from day to day as the problems came up. They had never been solved, as far as we knew, by anyone in the industry.

Q. Have you ever heard of a concern called the Saftee Glass Company?

A. I have.

Q. Have you ever been in its plant?

A. I have.

Q. Where is its plant?

A. At that time it was at Wissinoming, Pennsylvania. They have moved its since to some part of Philadelphia of which I am not sure.

Q. How did you happen to be in that plant?

A. I was sent there as an industrial research representative, endeavoring to help them to solve some of the problems that confronted them as applied to pyralin.

Q. You were industrial representative of what company?

A. du Pont Viscoloid Company.

[fol. 415] Q. When did you visit the plant of the Saftee Glass Company?

A. I visited them at various times from, approximately, 1921 to 1925.

Q. What method were they using of producing laminated glass?

A. They used an autoclave and rubber bag method, which in principle was approximately like ours, the one we adopted, but from a practical standpoint or mechanical standpoint was entirely different.

Q. Will you tell the Master briefly how it differed from the process of the Pittsburgh Safety Glass Company?

A. The Saftee Glass Company of Wissinoming was a very small company and their operations were what one would consider more or less hand operation. An operator would prepare a few pieces of glass and take them to a place where they would be cleaned and sprayed with cement, and after accumulating a few of them the same operators would put them into rubber bags and evacuate them, and their presses were very small, approximately thirty inches deep by thirty inches wide and fifty inches long.

Q. When you say "their presses" do you mean their autoclaves?

A. Yes, sir. They called them tanks. And in putting the glass in a small autoclave of that kind there was no difficulty encountered circulating the water so as to get even temperature and pressure, and they had a few ex-

perienced operators. Their heating and compression was a very simple problem as compared to ours on this much larger scale. They had been in business from approximately 1914.

Q. Well, would it have been possible for that Saftee Glass Company of Wissinoming, with the plant and equipment it had, to turn out anything like the glass that you were called upon to turn out in the Pittsburgh Safety Glass [fol. 416] Company's plant when you received the Fisher Body orders?

A. My opinion is that it could not have begun to handle any quantities of that size.

Q. Have you ever been in the plant of the Triplex Corporation?

A. I have.

Q. When?

A. I was in their plant several times in 1927, and again in the fall of 1928.

Q. How did you happen to go there?

A. On the first several occasions I was sent there at their request, went there at their request, to help solve difficulties in connection with their pressing and their handling of the celluloid. On the latter visit I was invited there by Mr. Haskell as a return visit to the visit he made to our factory, to see all their equipment and make any suggestions and get any information that might be of mutual benefit.

Q. When you went there in 1927 were you sent by the du Pont Viscoloid Corporation?

A. I was.

Q. You were still in its employ?

A. Yes.

Q. Without going into details, what method was the Triplex Corporation using to press their glass together and make it laminated glass?

A. They were using an alcohol process for dipping the celluloid, and the platen press method for effecting the bond.

Q. Were they using autoclaves?

A. They were not.

Q. Now, was there any other company that you knew of that had been using the autoclave process for producing laminated glass before you began with this Pittsburgh Safety Glass Company?

A. Not that I know of.

[fol. 417] Q. Now, we have spoken of the dust and matters of that kind; also the labor troubles. What was your experience in the use of these rubber bags in making laminated glass? Did you have any troubles about that?

A. The rubber bags at first tended to fail, due to the heat and pressure which broke down the rubber. This permitted moisture to get into the bag which ruined the product, or it permitted air to get into the bag before it got into the autoclave, which also interfered with your compression and produced a piece of laminated glass which tended to separate.

Q. If water got into one of these rubber bags before you had completed the adhesion of it in your autoclave, how would that spoil the product?

A. If water got in, it would develop the same steam pressure inside the bag as you had outside the bag and nullify the effective pressure. Besides, the steam has the property of precipitating pyroxylin from celluloid, making it turn white, and naturally make a bad product. Furthermore, it has the property of impregnating celluloid up to a certain point before it will turn celluloid white. In doing this it causes the celluloid to swell. The result is you have a laminated plate in which the celluloid in areas is saturated with moisture, and this moisture escapes after it is put into service or during subsequent operations, causing the celluloid to shrink and pull away from the glass.

Q. In your judgment is it necessary to have these rubber bags tight so they won't admit either water or air in this process?

A. Yes, absolutely tight, so that neither water nor air is in there, unless there is a possibility in the case of air of putting a non-compressible chamber in the rubber bag so that the air can escape to the non-compressible chamber, and in that way not nullify the pressure of the outside. I [fol. 418] might say here that we argued and there was a great difference of opinion on that point, during the first several months of production—large production.

Q. But so far as the water is concerned, you must keep that out?

A. Absolutely.

Q. And if that gets in, that is the end of your proper lamination?

A. That is correct.

Q. Now, then, this air. What about this having a separate chamber in the bag for the air?

A. By non-compressible chamber we mean a steel chamber with walls and supporting pins in it, capable of withstanding the pressure. That chamber is vented by holes through it leading to your glass. Then the slight amount of air that stays in there after the plates are put in the bag and the bags are closed under the temperature and pressure flows to this point of lower resistance within the walls of the container, and in that way escapes from between the plates. We used them only for a short time, at which time we found they caused other breakage and wearing out of the rubber bag, so that they defeated their purpose, and we had to discard them.

Q. So the net result was what with respect to both water and air getting in these bags? Must you keep them out?

A. Must keep them out—a very, very small degree.

Q. There was some testimony yesterday, I think, about the rubber bags when they are inside the autoclave drawing down over the edges of the glass and producing what Mr. Clause called let-gos. I am not certain I grasped that entirely, and I wish you would make that clear to the Master.

Mr. O'Shea: I would like to make an objection to the materiality of all this testimony.

[fol. 419] The Master: We will take it subject to the objection.

A. During this rush for production it became necessary for us to put double sandwiches of glass in a bag, and at one time we were putting four sandwiches, one on top of the other, in a bag. When the bag is evacuated under these conditions, with eight layers of glass and four layers of celluloid stacked on top of each other, it becomes necessary for the bag to stretch down over these edges and the net result is that the bags, which had to be reinforced to prevent them from cutting along the sharp lines of the glass, exerted a terrific leverage action on the very edges of the glass. This is true whether one sandwich is in or whether four sandwiches are in the bag. In the center of a plate the celluloid becomes plastic by heat but cannot flow away; around the edges, when the celluloid is soft and there is no resistance against the celluloid, the glass will yield to a

pressure of 150 pounds per square inch and tend to bend together, causing the celluloid to flow from between the plates or become thin at the edges. Measuring this deflection, our product averaged from half a thousandth to two and one-half one-thousandths less in cross-section at the very edge than at a cross-section a half inch in from the edge. This amount of bend in a piece of glass forty-eight inches long would represent a bend of approximately six inches. In other words, a light of glass forty-eight inches long, bent to the same radius, when laid on a table would only come within approximately six inches of the table at the center, which shows the terrific strain in the glass, and as glass will not fatigue under these conditions, it represents a constant pull, tending to stabilize itself and reach its normal plane. This pull is aggravated by thermoexpansion when the plate is subjected to heat or cold, as the at-[fol. 420] mospheric condition. It is also aggravated by a difference of moisture content or moisture attack, so that under practical use glass that has these strains will sooner or later tend to come apart.

Q. Do I understand you to mean that if the rate of deflection from a plane surface, which is shown by the glass from the distance of half an inch from the edge of the sheet to the edge, is applied to the whole sheet forty-eight inches long, it will make an arc which at the center will be six inches away from the plane surface?

A. That is correct. That is merely to illustrate in a more concrete way what that edge strain amounts to.

Q. Now, when you say this glass, this half inch at the end of the plate, is bent in that shape it tends to return to the normal, you mean there is a springing back tendency as long as that bend continued?

A. That is correct.

Q. What effect did that actually have upon the laminated glass you were producing there?

A. It had either the effect of pulling loose, causing a separation, or it caused the glass to break along that line half an inch back. It was not unusual to find back lights broken in a curve practically the entire way around half an inch in from the edge. At this time windshields broke very frequently in our edging operation because of the strain which was just at the point of overcoming its strength.

Q. Were these sandwiches of laminated glass cut to finished size when put into the autoclave?

A. They were.

Q. Would breakage of half an inch around the edge make any difference?

A. It would make it absolutely unsalable or unusable for the purpose for which it was intended.

Q. It had to be thrown aside?

A. Yes.

[fol. 421] Q. Will you describe something about these let-gos? What they were and the effect they produced on the glass.

A. Well, a let-go is a term used to define a pulling away of the glass from the celluloid around the edge. This condition was not acceptable to our customers and necessitated their rejection whenever it occurred.

Q. If water is allowed to get into the edge of a piece of laminated glass where there has been a let-go like that, as, for example, water might get in in its use in a windshield, would that make any difference in the character of the celluloid?

A. If we have a separation, a let-go, to start with, moisture gets in that and causes it to grow. If there is no separation to start with, and laminated glass in which celluloid is used as a binding sheet is subjected to continuous moisture, such as you have described—the channel of a windshield—separation will gradually develop; whereas it would not develop by intermittent moisture as would occur on the top of a side light where it would get wet with rain one day and be dried out the next day.

Q. If water gets in at the edge of one of these pieces of celluloid that is in a light of laminated glass, will that extend further into the light?

A. The moisture penetrates celluloid—it is very much the same as wood—causes the celluloid to expand and push the plates of glass apart. Its progress inwardly through the celluloid is very slow.

Q. You spoke a while ago of one of these rubber bags being evacuated. What did you mean by that expression?

A. Having the air exhausted from the bag.

Q. May I ask you what is your present position with the Duplate Corporation?

A. Superintendent.

[fol. 422] Q. Does that mean plant superintendent?

A. That means plant superintendent with the heads of production, scheduling, service, inspection, efficiency, welfare, accounting, reporting directly to me.

Q. How long have you been superintendent of the company?

A. Since June, 1930.

Q. Was there any superintendent of this plant when you went there January, 1928?

A. There was not.

Q. When did the company first get a superintendent for the plant?

A. As I recall, the superintendent was sent there about February. It might have been the latter part of January.

Q. 1928?

A. Yes, sir.

Q. What was his name?

A. Mr. McClure.

Q. Had he had any experience in the manufacture of laminated glass?

A. He had not.

Q. How long did he remain as superintendent?

A. He remained until the fall of 1928.

Q. I don't wish to criticize Mr. McClure unduly, but did he or did he not prove to be capable of operating that plant?

A. In the opinion of our general manager he did not appear to be capable, I should say.

Q. It was a new enterprise for him?

A. It was.

Q. And who succeeded Mr. McClure?

A. Mr. Fisher.

Q. And how long did he remain as superintendent?

A. He remained approximately three months.

Q. Until when?

[fol. 423] A. January, 1929; maybe February.

Q. And had he had any experience in the manufacture of laminated glass?

A. He had not except as assistant superintendent to McClure for a few months before McClure left.

Q. How did Mr. Fisher get along as superintendent? Was he able to manage the plant?

A. Not in the opinion of our general manager.

Q. Was he removed?

A. He was let go.

Q. Who was the next superintendent?

A. A Mr. Penning, who was our general manager, acted as superintendent and general manager.

Q. Had he had any experience in the manufacture of laminated glass?

A. He had none.

Q. How long was he superintendent?

A. He was superintendent until June, 1930.

Q. Do you know how it happened that he ceased to be superintendent?

A. I think in the opinions of our officials they were unsatisfied with the way he was handling the work.

Q. The company was feeling around here and trying to get the best man for this job apparently?

A. That is right, doing the best they could.

Q. I want you to speak briefly about the hauling of this plate glass on these trucks. That is, after the glass was laminated—hauling to the edging department. Did that have any effect on your output?

A. The glass had to be hauled to the edging department on these "A" racks and represented new problems that had never been experienced even by ourselves in handling plate glass, as our product which was delivered to the edging department in the early stages was frequently very badly bowed, and this caused a considerable amount of trouble trying to keep a stack of glass reasonably tight to prevent [fol. 424] slippage. So we were faced there with the problem of more shuffling than under ordinary glass operations —plain glass—and due to the contour it was very difficult frequently to stack the glass so that the stacks wouldn't fall over. At first our "A" racks were constructed so that in order to prevent glass from toppling over, such as back lights which have rounded ends, we would lay them flat and they would project over the end of the "A" rack so that the electric truck caused considerable damage in bumping them. An occasional rack was upset due to the fact that inexperienced operators failed to balance the glass on both sides of the rack and an inexperienced truck man tried to pick it up with all the weight on one side.

Q. Did you make any effort to keep the plates of glass from sliding or cracking as they were being transferred to these trucks?

A. We tied them with ropes, which is standard practice in the plate glass industry, as tightly as we could without causing breakage.

Q. Notwithstanding that, state whether or not there was any considerable breaking or marking of the glass with lines by this transfer in these trucks.

A. Yes, there was a lot of breakage and chipping. Our racks can account for a considerable amount of chipping, due to the fact that nails were in them and would tend to work out by conveying over the tracks, and they would work up where they would rub over the surface of the glass or hit the edge. Our felts were nailed on by inexperienced men, and the trouble with resting glass on nail heads was it settled through the felt and we had breakage from simply trying to tie the glass tightly together so as to prevent shuffling, and in carrying it that distance through the plate glass factory and after having brought it out into our room dirt and foreign matter such as sand would get between the plates which would score the surface of the glass, causing rejects.

[fol. 425] Q. Were there any of these corners of the glass that had to be kept particularly sharp on any of these windshields?

A. On the Fisher "V. V." type windshield. That was a specification, as a rounded corner would fail to contact the rubber seat and permit water to leak through in case of a severe rainstorm.

Q. Did you have any special trouble with the breaking of those sharp corners?

A. We certainly did, particularly in the operation of pressing where the rubber bag came down over the corner at both sides of the corner and represented a terrific leverage right at the corner so the celluloid could flow both ways.

Q. So you had both the rubber bag trouble and the transportation trouble?

A. Yes, and edging trouble.

Q. Now, in transporting the plates of plate glass from the Duplate cutters location into the laminating room, was there any breakage or scratching of the glass there?

A. We suffered a very great amount of shrinkage. Due to that poor or difficult condition of operating, as in cutting the contours or the pattern shapes and stacking them on racks, very fine chips of glass got down between the two

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plates of glass causing the surface to be marred, so that the plates had to be rejected before laminating them. In plate glass frequently a marred surface can be removed by an additional scratch wheel operation, but in laminated glass your scratches come between the plates and there is no way of getting at them. They show up just as objectionably between the plates as they do on the outside surface. Breakage—venting in that transportation was very high.

Q. I want to ask you to explain the difficulties, if there were any, about cutting these pieces of plate glass to size [fol. 426] before you made them up into the sandwich.

A. That was practically a new operation so far as we were concerned.

Q. Why was that?

A. We had to employ all new help or occasionally failures in that kind of work, and the one-eighth inch glass we were using was almost a new thing at that time, and we were so concerned with these inexperienced operators. If the template would slip or their cutter would slip, it would result in a rejected plate. Frequently in breaking it off their cut wasn't complete, and would run the crack across the center of the plate or some place where it would cause the plate to be rejected. Besides, they examined the glass as they cut it. We had no expert examiners. As a matter of fact, we didn't know just what would pass and would not pass our trade, until that was established by actual experience. They used glass—let glass get up to our assembly conveyor which caused rejects.

Q. You said this matter of breaking off the edges of scored one-eighth inch plate glass was new. Hadn't there been glass of that gauge used before—plate glass?

A. Very little plate glass up to that time. Just about that time was the development of the one-eighth inch plate glass for this particular purpose in this territory.

Q. Did the men find difficulty in breaking off the edges outside the pattern without injuring the edge remaining?

A. They did. We were only able to overcome a large number of difficulties by experience.

Q. How much of a margin did you find was needed over the size of the pattern to allow the men to take hold of it to break it properly?

[fol. 427] A. At that time we standardized on an inch margin as being a reasonable amount to allow an operator

to get a clean cut, which was a prime essential in this cutting so that we would not experience later difficulties due to the high pressure and temperature to which the glass was subjected—the heating and cooling expansion and contraction in our autoclave presses.

Q. I suppose by the use of plyers you could have used a quarter-inch margin for breaking off?

A. We could have, but it would have materially increased our cost of operation and probably offset the decrease in cost of glass.

Q. Why?

A. When a man has to use a pair of plyers he goes along the plate and nips it in various places all the way around and goes back and picks up the chips between the two original breaks, and that slows him up. So that the labor in doing that would in many cases offset the additional cost of the glass. There is a point in there where you strike an economic balance, but if plyers have to be used all the way around, your increase in labor cost would offset a large allowance for glass so as to facilitate operations.

Q. If the edge of the plate that goes into the laminated glass is not made clean and accurate, does that make any difference in laminating?

A. It has the tendency of causing cracks to develop, due to expansion and contraction which in a plate is always more or less around the edge than in the center. If there is more contraction, there is a strain which will tend to cause a split to develop in the glass.

Q. Now, will you explain to the Master whether the Duplate Company suffered any loss in dealing with its customers by reason of the necessity of having an inch margin around the scored outline of the glass to allow for a proper edge in breaking? There was some testimony by Mr. Clause [fol. 428] on that subject, and I would like you to elaborate a little bit.

A. If that is the finished size of the plate—29½ x 17½—our company, the same as any other plate glass company, because it was standard in the trade, got paid for an 18 x 30, but if we got an 18 x 30 plate over there, it didn't allow this man the full inch margin so we had to order the next higher bracket size, which is always two inches higher in both dimensions. They don't work on odd inches; it isn't

standard. It is always the even inches or the next even inch. That was what you paid for.

Q. What would the next bracket be?

A. 20 x 32. That would give the man cutting a little more than was actually necessary, but we would get that, or we would have to pay for it just the same, because we couldn't buy a 30½ or a 30¾. We had to buy a 30 or 32.

Q. Now, in other words, in order to get a finished article 17½ x 29½, your company would have to pay for a piece of plate glass that would be 20 x 32?

A. 32 x 20; that is correct.

Q. Because you found you had to allow an inch margin for breaking off?

A. That is right.

Q. But when you would sell to your customer a piece of glass 17½ x 29½ what dimensions, according to the custom of the trade, would you charge them for?

A. 18 x 30.

Q. So that in that case you would be paid for a plate glass 18 x 30, whereas the company would have to buy one 20 x 32?

A. That is correct.

Q. And the difference would be a loss to the company?

A. That is correct.

Q. Did that happen frequently?

[fol. 429] A. Very frequently.

Q. Is this business of charging the customer for a light of 18 x 30 where it measures only 17½ x 29½—is that the custom of the plate glass trade?

A. That is the standard custom with the plate glass trade.

Q. And the requirement of buying in brackets—that is to say, in this case the next bracket would be 20 x 32—is that in accordance with the plate glass trade?

A. That is the standard practice.

(Recess taken until 2 o'clock P. M.)

Afternoon Session

J. H. SHERTS resumes the stand.

Direct examination (continued).

By Mr. Smith:

Q. There is one question I asked you this morning, Mr. Sherts, and that was as to the effect of water getting to the edge of one of these laminated sheets of glass. If that glass is properly made and there is proper cohesion, would the amount of water that would get in such a sheet of glass, say in the door lights of an automobile, in any way interfere with the pyralin?

A. No, sir, it would not.

Q. How about the windshield?

A. In the case of a windshield where, if the glass is held in a fixed channel by felt or rubber, it collects moisture and keeps it there so the edge is under constant moisture attack, even in a temperate zone, and under constant moisture attack the pyralin does tend to absorb moisture and cause separations to develop which grow right up into the [fol. 430] plate and cause replacements in a period of—we notice them—three months to a year and a half.

Q. How do you handle that at the present time with windshields?

A. We were forced to adopt what has been termed edge sealing in all windshields and back lights recently because of the experience with lights in service. Originally we didn't think it was necessary in windshields and back lights. We failed to appreciate how severe the moisture attack was, but our actual experience showed a large percentage, made the best way we know how, without any edge strains or other defective laminations, separate just because of that constant moisture attack due to water staying in the channel.

Q. The back light of the automobile body has the same trouble?

A. The same as the windshield.

Q. Not the lights in the doors that are raised and lowered?

A. The moisture attack isn't constant enough to cause trouble in practical service.

Q. How about the glass separating the chauffeur from the back compartment?

A. That wouldn't require it.

Q. You have spoken of attacks of moisture in this well made product. Supposing you used in the windshields or the back light a sheet of laminated glass that has had this let-go in it already, what will happen there?

A. Then, of course, the moisture from the atmosphere is sufficient to get in there, and when it gets in it stays in that crevice the same as it stays between two plates of glass. It is almost immeasurably narrow, so there is no circulation of air, not sufficient to remove the moisture, and you have in that little bit a separation an atmosphere of constantly high humidity, which continues to react and [fol. 431] work inwardly. It forms a little cell, as it were, to hold the moisture and having no circulation—that cell you can tell because of the film of light reflection is probably one hundred thousandths of an inch thick but sufficient for the moisture to get in, and a very little moisture will make that one hundred per cent. saturation.

Q. So what is the result? How do the sheets which have let-gos compare with the perfectly made sheets when subjected to the same conditions?

A. Well, the one will separate very much more quickly under the same conditions than the other—that is a very ban condition; and under normal conditions of the atmosphere one will continue to separate and the other won't because there is no place for it to start.

Q. Which will not separate in the latter case?

A. The one that is perfect to start with—has no strains.

Q. From the standpoint of appearance, will the automobile makers accept laminated sheets that have let-gos in the edge?

A. They absolutely refuse to accept any with separations on the edges. That shows during the first three months of our operations because we were not able to produce a glass that would not show any. We suggested, and because we had no experimental data to cause us to have any different opinion we believed at that time that these separations caused by the edge strain would only go in as far as the edge strain, and therefore in side lights and windshields that fit in channels approximately a quarter of an inch deep they accepted from us lights that had separations that

wouldn't extend beyond that—up to three-sixteenths of an inch. None, of course, on the top edges where they would show, but where they didn't show Chrysler and Fisher Body all accepted the same standard. They had to have glass and they said, "We will put it in and if it goes bad, you will have [fol. 432] to replace it." It was the best we could do, and as we were throwing out approximately 30 per cent. as fast as it came from our bags, we had to ship them in spite of the fact that we hadn't had time to prove it out that it wouldn't stand up satisfactorily, or that it would stand up saisfactorily, and they put it in their cars at that time in spite of the bad condition, which we would recognize now as being defective and having in it the germs of trouble to develop under actual service in cars. All that, of course, had to be developed only by experience, accelerated tests in the laboratory failed to check—actual service tests, and that accounts for a very large percentage of our returns from the customers.

Q. Did a large amount of this glass of the character you describe that you furnished to the manufacturers come back to you?

A. Well, some customers rejected an average of 30 per cent. of what we sent them.

Q. Is that high or low?

A. Oh, that is terribly high. That applies—I mean they rejected that much before they put it in the cars. At the same time they were putting in their cars a great number of lights, a large percentage of which showed this separation somewhere down where it was to be hidden, and we all took the gambling chance and hoped that it wouldn't develop, but the result was that a very large percentage continued to grow until it became noticeable to the driver, and in that type of car, as soon as a little defect of that kind becomes noticeable, they took it back and our company had to replace it free of charge, even go to the expense of paying for them to take it out and put a new light in. We got the glass back in full carloads from some of these people.

Q. Now, what are vents?

[fol. 433] A. A vent is a term used in the glass trade to cover a crack which starts at the edge and gradually works inwardly until it is objectionable, and a crack in a glass like that starting inwardly just grows as time goes on and terminates when it reaches the edge, and there is no rhyme or

reason just where it is going to go. It is a little mark starting at the edge and working inwardly.

Q. It may go clear across the plate?

A. Yes.

Q. What was the principal cause of these vents in a sheet of glass? Does it come from the cutting where they break off those strips?

A. A great percentage came from that originally because of inexperienced cutters.

Q. Was that why, one of the reasons, you insisted upon leaving a one inch margin for breaking off around?

A. That was the principal reason for wanting that, to prevent vents, which of course to anybody without experience was an obvious difficulty.

Q. You spoke of moisture getting to this glass in your process through these bags leaking. Was there any other way you had trouble with moisture? Did you have any trouble with moisture with any cloths that you used after you took the stuff out of the bags?

A. The way we were operating, when the bags came out of the autoclave, of course they were wet as they could be. In evacuating the bags they tend to rumple around the edges and form little depressions which would carry water, and when they were pulled off the autoclave rack and put on the unloading table, of course the unloading table became as wet as it could be, and when you pulled the cloth out of the bag it picked the moisture up. Then when you opened the bag the water was between the two lips at the mouth of the bag, and when it was opened that gradually worked [fol. 434] into the inside of the bag so that a perfectly good bag could contain moisture that got in through the lips and the cloths picked up moisture from the table.

Q. What do you mean by "cloths"?

A. The cloths are the pieces of canvas that we used for wrapping the sandwich before we sealed it into the bag to keep from scratching the glass as it was put into the bag. In doing this double pressing and four-decker pressing, as we called it, we had to put blotting papers between the plates of glass, and it was only after months of operation that we discovered that the paper itself, blotting paper, under humid conditions absorbed sufficient moisture from the atmosphere to cause a defective product. That was only determined after we had taken the step first of drying the bags. We first learned that holes would cause moisture

to get in. That was the most obvious thing. We started to inspect every bag. We inflated them to see if they were leaking. Then we set up a drying of them, where each bag was placed over a pipe through which hot air was blown into it to dry them out. Knowing our bags didn't leak and were dry to start with, we still encountered this moisture trouble and then we discovered, probably not until December, 1928, that the paper itself used in packing in there carried sufficient moisture to completely saturate the small amount of air that was left after the bag was evacuated as far as it was possible to pull it with a practical vacuum pump. There was very little air in there and it took very little moisture to make that thoroughly saturated and impregnate the pyralin and make it swell up and turn it white.

Q. About when was it you adopted the preliminary pressing process instead of the rubber bag process?

[fol. 435] A. The preliminary pressing process was adopted about October, 1929, but not completely. I must explain that from October to December we preliminarily pressed with rubber bags. We first put the plates in rubber bags and only gave it 80 pounds pressure to stick them together; then we took them out of the rubber bags and put them in the autoclave without rubber bags, and it was on January 1, 1930, that we discontinued the use of the rubber bags completely, having by that time obtained a preliminary press that we use at the present time and employed no bags.

Q. There have been some cases, even after you adopted the preliminary pressing process, where you used your old plant and made some little glass in rubber bags after that, did you?

A. No, not in the old plant but in our new plant. We still use the rubber bags for plates that are too large to go in our preliminary presses.

Q. Is that infrequent comparative to the other?

A. Infrequent comparatively speaking, but I will take a step farther than that. After they come out of the rubber bags we put them in the autoclave to do the pressing. In other words, we only use the rubber bags now, since January 1, 1930, to preliminarily press and, of course, they don't go into water now and it is only a few bags that can be thoroughly inspected, as no production depending upon it, makes us operate under a favorable condition.

Q. When you say they don't go into water what do you mean?

A. We put the bag right into our carbitol autoclave but only use eighty pounds pressure.

Q. What do you mean by carbitol?

A. That is the liquid that has been described as being used. I ought to state that carbitol isn't quite the liquid. We use diethylene glycol. Carbitol is ethylene glycol, to all intents and purposes the same, but one is a little cheaper. [fol. 436] We did use carbitol for a time, but you can mix them together and use them.

Q. Are these liquids less injurious to laminated glass than water in the autoclave?

A. Yes, but water could be used in that state because it is a very short period. We use this liquid for the simple reason that we can pull our autoclave charge hot. With water you have to cool it down or else it will turn into steam and be bad operating. Water tends to corrode your equipment, and this other solution works to an advantage from a production standpoint.

Q. Roughly, what percentage of your glass since January 1, 1930, has been made by the preliminary pressing process exclusive of rubber bags, as compared to the part that has been made since that date with rubber bags?

A. Roughly speaking, I would say 99.9 per cent.

Q. Which way?

A. With preliminary press without rubber bags. Understand, of course, rubber bags at the present time or since that time are used in preliminary pressing and not like the old method of using rubber bags.

Q. Where they went in the autoclave?

A. That is right, where we gave them 150 pounds pressure.

Q. Do you still use rubber bags in your preliminary pressing?

A. Just for this one-tenth of one per cent. perhaps—sizes that are too large to go in the preliminary press, bent glass, and a few specialties.

Q. Take the matter of pyralin losses. Do you know any facts which you can tell the Master which would account for these large pyralin losses which have been suffered by your company?

A. When we started in, the pyroxlin plastic companies had their big hydraulic equipment built up around what

was required for combs, brushes, mirrors, toilet articles, [fol. 437] and sheet pyralin for automobile side lights, and so forth; and that consisted of a big iron case 20 x 50 inches in size—21 x 52 approximately. That is about all the equipment they had at that time except one other which they made up to supply Ford windshields. In other words, there wasn't sufficient business and good reason for making a lot of different sizes at that time. The Ford windshield business was large enough to justify expenditures required to make a certain number of cases to press that particular size. That size didn't represent an economical size for any of our production here, so we were forced to use their standard size, 20 x 50, and it so happened when the orders came in for Chrysler and Fisher that in a great many cases you could get one side light out of a sheet and you had an end that wasn't big enough for a side light or back light or windshield or anything else we had on our order. We saved those ends for a long time, hoping that something would come in that we could use them for. After a year or so we had such an accumulation of ends that we didn't know what to do with them and they were disposed of as scrap. In those sizes at the beginning it was not unusual to see 30 per cent. of the pyralin sheet scrapped. Well, as soon as we saw that, in June or May——

Q. Of what year?

A. 1928—I presented a paper to the du Pont Company showing them how much we could save if they would put in new equipment and give us seven new sizes. They went over those figures and saw that they would realize sufficient to justify the investment and started mechanical changes necessary to produce those sizes for us, so that in a month or so after that we were beginning to get a variety of sizes which cut very much more economically. I figured out at the time we started, as soon as we knew what sizes Fisher were ordering, that with the 20 x 50-inch sheet the best [fol. 438] theoretical loss, everything being done perfectly, we would have a 25 to 30 per cent. scrap loss at the minimum.

Q. In pyralin?

A. Yes, in pyralin. With the new sizes we had a possibility of cutting our scrap loss down to 15 per cent. With those theoretical figures I didn't think our production department were doing bad if they ran 20 per cent.—15 or 20

per cent. above the theoretical loss, and that is just about what we did. I have never seen pyralin—such a wastage of pyralin in any operation at Arlington. I have had a lot of experience with it and it was the first thing that appeared to me as one of the very expensive commodities used in the glass being wasted at the rate of 30 to 40 per cent., and we made the change just as quickly as we possibly could and not without considerable persuasion on our part. Now we have about twenty-four to thirty sizes and we revise them every few weeks, as soon as we see a customer's order.

Q. When you spoke a moment ago that you didn't think it was out of the way to get 15 to 20 per cent. actual loss in factory practice above the theoretical loss, what would that bring your loss to?

A. I mean 15 to 20 per cent. over the theoretical loss. In other words, 20 per cent. or one-fifth would run it up to 18 per cent.

Q. If the theoretical loss was 15 per cent., you wouldn't be surprised to have it run actually to 18 per cent.?

A. That is correct, and when I said 25 per cent.—during those first few months where we couldn't supervise it, I saw from time to time, and operators were discharged for the condition, where a man made a mistake and cut the wrong sizes and he took fifty sheets at a time that were cut wrong, and rather than have that get charged up against him, where he would have lost his job anyway, he took them over [fol. 439] to a cutting machine and cut the pieces and threw them in the scrap box so it wouldn't be held against him.

Q. Was that done to your knowledge?

A. That was done to my knowledge. I happened to walk in the room where the man was doing that on two different occasions, and, of course, the man was let go immediately, but conditions such as that existed beyond our control, especially working three shifts when only a few had any idea of what was right and what was wrong.

Q. In other words, these cases where you saw the man cutting them into pieces were where the man was covering his error by cutting them in pieces?

A. Yes, sir. Other times these were stamped wrong. We had a stamp—that is, the Pittsburgh Safety Glass Company's trade-mark. If that gets in the wrong corner or up a little too far or down a little too far, that causes a rejec-

tion, and sometimes you would find a hundred or hundred and fifty sheets stamped wrong before it was caught. We had a machine and the thing operated the same as putting a mark on a toothbrush handle, and that was impressed in the sheet in gold letters that couldn't be removed, and then the sheet had to be cut down and you would lose 25 per cent. of the original area of the sheet.

Q. What caused this mistake in the stamping?

A. The operators thought they knew and they would go ahead with the thing. They were rushed to get out production, and although it was laid out on a blueprint, there was misunderstanding and poorly organized and lack of knowledge where to put this thing.

Q. Would the inexperience of your personnel at that time have something to do with it?

A. That was the most important source of trouble.

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Q. When was your new plant built?

[fol. 440] A. Our new plant was built during the summer and fall of 1928.

Q. Is that the brick structure?

A. The brick structure; five-story building.

Q. And when was it put into service?

A. It was put into service about the last week in December, 1928, and completed during the next couple of weeks.

Q. Just briefly, what is the character of that? Is it a modern, well-equipped plant?

A. Yes, sir, that is a modern, well-equipped plant from every standpoint for manufacture of laminated glass. Brick, concrete, fireproof building, five stories high.

Q. Does it provide for clean air and matters of that kind?

A. It provides for clean conditions in general, but of course inside that factory we don't make an effort to keep the entire factory clean. We have a separate assembling unit, which is a little building itself, inside the big building with double and triple filtered air.

Q. That is where the clean air is necessary?

A. Until after the plates are laid together.

Q. Now, when you got into your new plant did you have any trouble?

A. When we went into our new plant we made a number of changes intending to overcome a lot of difficulties we

were experiencing in the old plant, and we found a lot of these changes, although they cured one condition, they introduced a more serious trouble of another nature than had been expected, and the result was there was a lot of changes and modifications in equipment necessary before we knew that it wouldn't work at all. That took us through January and February. By February 15th there was so much trouble with production difficulties that our yield from the examiners after pressing went down to 62 per cent.

[fol. 441] Q. Was that in 1929?

A. 1929. About the middle of February it was so bad that we decided to go back to the old factory again and operate there where we could do somewhat better, so then for a period we operated both factories until we made the transition again back to the old factory.

Q. How long was it before you got your new factory in proper condition?

A. As soon as we got back into the old factory, about March——

Q. March, 1929?

A. 1929—we started to revamp the new factory, and it was about July, 1929, when we started to move the production back into the new factory again. Then for a month or so we operated it as before, part in one factory and part in the other factory. During the time we were in the old factory for the second time we continued to do our glass cutting in the new factory, didn't resume operations in the plate glass factory where we originally cut it, but we had to transfer the glass, therefore, from the plate glass factory to the new factory, then from the new factory to the old factory and from the old factory back to the new factory again for edging, inspection, packing and shipping.

Q. When did you get the difficulties in the new factory ironed out so it was in proper shape for operation?

A. We got back into the new factory in July.

Q. 1929?

A. 1929. Probably completed the moving by August, but after that, when we tried to put this new equipment which was built larger than the old into operation, difficulties continued to come up so that it was not until the end of the year that we had it in fairly good working condition, and before that was done we had decided to revamp the autoclave system and started tearing that out and changing that around,

so it was a state of confusion from the time we started in the new factory until January 1, 1930.

[fol. 442] Q. Well, now, at or about—I am not holding you to the exact date—at or about January 1, 1930, as I understand it, the new factory was in good shape with the difficulties ironed out?

A. Yes, sir, then we were in fair shape. A lot of changes were made after that, too. They are constantly keeping developing the thing because it is a matter of development. It couldn't be seen anywhere else, and a lot of major changes were made after that time, but I should say fairly good operating conditions after January 1, 1930.

Q. In the new factory?

A. Yes, sir.

Q. And after January 1, 1930, for the most part did you use the new factory and not the old in your operations?

A. Yes, sir.

Q. Now, as the result of these difficulties in your manufacturing operations, will you state whether or not you had a large amount of glass rejected? I mean that you rejected a large amount of glass that you would produce.

A. At the beginning we considered ourselves fortunate if we could deliver to our edging department approximately 70 per cent. of what we put in the bags to press. That gradually went up and we camped on one type of defect after the other. By that I mean boys with more than average ability and training were put on to study these various defects to ascertain the cause and to work up a method of eliminating them.

Q. In addition to those rejections, did you have to reject glass after it came from the edging department?

A. Glass that was sent to the edging department frequently developed defects that were not the result of edging or anything done in the edging there. They were direct carry-overs from pressing that didn't develop until after they had been inspected and sent down there, and in that [fol. 443] department we felt we were fortunate if we could maintain originally somewhere around 80 per cent and then later 90 per cent.

Q. Ninety per cent. of the production?

A. Of what we sent down there—not the production.

Q. That is to say, the losses there would be from 10 to 20 per cent. of the glass they processed?

A. Yes. Beyond that, as I said before, in rough figures, we got a large percentage of returns from customers.

Q. In addition to the glass which you people were forced to reject in your own factory through various defects, was there any substantial amount of glass rejected by your customers during this period?

A. The customers' glass had to receive an inspection and certain customers rejected as high as, I recall definitely, 35 per cent. of big shipments before they even put it in their cars or did anything with it. Others were less, and accounting figures would have to be gotten to decide just what they were, but there were tremendous returns because of these little defects that developed after they left us, or other things that were not acceptable to them that we sent out in good faith, such as edging or template size and inside scratches, and one time we ran into haze that you can't see in ordinary daylight, the same as that window. You don't notice it but after it got into the car and you drive at night it simply cuts off your vision so it is blank, and we found we had sent out to our customers thousands and thousands of plates with that defect. That had to come back to us, and after it came back to us we found we had thousands and thousands of those in production, and we went to our pyralin and inspected our pyralin and we had to return our entire pyralin stock, shutting our line down, and we trucked it by truck to Creighton by day and night to keep us [fol. 444] going, to try to get away from that defect. Seventy thousand sheets went back at one time.

Q. Do you know whether or not in 1928 you bought any large stock of these large-sized pyralin sheets?

A. Well, it was in 1929, about August, when we had to return practically our whole stock of everything we had here. Then we had to take all pyralin that was available, regardless of what size it was, and I know at that time we had to take the 20 by 50 inch in greater proportions than we would have ordered had the thing run along in the natural way. I am not acquainted with the exact figures, but I just know we had to order very large quantities of 20 by 50 and paid for them, even after they had developed for us a more economical size, to get out of the hole.

Q. Were those 20 by 50 inches the large orders you gave at that time? Were they filled and the pyralin received by your company?

A. Yes.

Q. I want to turn back just for a moment to these rubber bags. Were there any clamps used on those rubber bags?

A. We used two iron bars with what we called a "C" clamp. The little "C" clamp was attached to the one iron bar and through the other end of the "C" clamp was a little bolt. The "C" clamp with the one bar was placed over the mouth of the bag, then the other iron bar was slipped on the other side of the bag, laid on the top of the bag under the "C" clamp, so that we had the bag between the two iron bars, one on each side of it, and they were pressed together by a series of little bolts that went down through the "C" clamp, and there was no way of fastening them more than to use the operator's judgment for tightening them up. They cut off the top of the bag so frequently that we had extra ends put on the bags of heavy rubber so if it was cut [fol. 445] off once, we could still use the bag and cut it off again. Every time we cut it off it would be in the autoclave with plates in it, so that it averaged twenty trips to the autoclave before the end was cut off. So it is obvious the percentage of plates that got wet just from that calculation, that practically every time you would run twenty you would get two bad ones. Now, we sent the customers a lot of glass that was wet in there and didn't show up the separation until after it got to him, and sometimes until after he got it in the car.

Q. What has your experience been with the quality of your product produced by the preliminary pressing process as compared with the rubber bag process?

A. Well, our experience with that has been very much more satisfactory. First, we didn't have to contend with any edge strain tending to cause separation; second, we didn't have to contend with any water getting in, and, third, we can maintain a good vacuum on it in pressing, and even if there isn't a vacuum on it in pressing, you can press the top and bottom to eighty pounds. It flows out into the atmospheric pressure of only fourteen pounds. We put the vacuum on to be safe in case of hollow spots in the pyralin. If the pyralin were a perfect plane and the glass a perfect plane, that wouldn't be a necessary operation at all, but none of them are. So we suck the air out to get out the little hollow spots between the pyralin and the glass.

By Mr. Christy:

Q. You mean that is in the preliminary pressing?

A. Yes, that is in the preliminary pressing. So we have eliminated a large per cent. of the cause of our difficulties.

By Mr. Smith:

Q. Take along the middle of 1930. How does your process compare as to efficiency and as to avoiding losses in [fol. 446] your product as compared to, say, the first six months of 1928?

A. Well, now, in 1930 we obtained a pressing yield of about 97 per cent.

Q. What were you obtaining back in the first half of 1928?

A. In the first half of 1928 we were doing well if we got 70 per cent., at that stage, and of course that contributed to a lot of other rejects later on.

Q. Mr. Sherts, what did you do with the defective glass that was returned to you by your customers, or with any glass that you salvaged in your operations where you would have a sheet of laminated glass with a defect along the end and you could cut it down to smaller size? What did you do with those?

A. We applied them to orders, much to our regret later on.

Q. What do you mean by that?

A. We didn't know at the time we started to cut that glass down that a large percentage of it had moisture inside and the pyralin was swollen and after it was cut down it would start again, due to the shrinkage—the same as if you put green wood in between two pieces of glass or steel. We thought if we cut off the edge, we would eliminate the trouble and have a perfectly satisfactory product.

Q. Then you had a lot more rejections from that cause?

A. They practically all came back to us again.

Q. However, whenever you cut down any of these defective pieces and sold them to your trade, was that reported in your accounting report to get on the books, just the same as in your other product?

A. Oh, yes. That was entirely separate and we accounted for every piece.

Q. If your books were properly kept, all that should appear in your accounts?

[fol. 447] A. Yes, sir.

Q. Was that true also with respect to any scrap that you sold?

A. Yes, sir.

Q. That all went into the company's accounts, did it?

A. Yes, sir.

Q. Was that true with respect to defective pyralin that was used in any way?

A. It was.

Q. In other words, as I get it, all this salvaged or rejected material was disposed of to the best advantage, as far as you could do it. Is that right?

A. Yes, sir.

Q. And the proceeds of it all went into the company's accounts?

A. Yes, sir.

Q. I show you an exhibit composed of several sheets, the first of which is entitled, "Plate Production Analysis showing plates accepted by Examiners and rejects by classification, also per cent of both." Does that title indicate the character of that exhibit?

A. It does.

Q. Is this paper that I have just handed you a transcript showing these plates accepted and rejects, as indicated in the title of the exhibit?

A. Yes.

Q. And these are figures taken off the books?

A. Taken from the books.

Q. And were these records that went into the books prepared under your supervision?

A. They were prepared by the accounting department for our working control, to give us a report of exactly what happened in each operation each day.

Q. But the basis of this were reports turned in from the factory to the accounting department, were they, or did they come into the factory themselves?

[fol. 448] A. They had men in the plant called checkers and examiners that made their report and kept the record which is handed to them and they tabulate it.

Q. And this is the result of that tabulation?

A. That is correct.

Mr. Smith: We offer this exhibit in evidence, and ask that it be marked Defendants' Master Exhibit "F."

Mr. O'Shea: Plaintiff reserves any objection to it until cross-examination.

Q. This exhibit which has now been marked Defendants' Master Exhibit "F" shows this production analysis of plates accepted and rejected by months, I believe?

A. That is correct. This first is only a half month because it was only started.

Q. The first sheet with figures is only half a month? That was from July—July 16th to July 31st?

A. That is correct.

Q. The second sheet, however, is for the full month of August?

A. That is correct.

Q. And the remaining sheets are by full months?

A. Yes, sir.

Q. Down to and including the month of April, 1930?

A. That is correct. There are two months in there that cannot be located.

Q. What months are those?

A. August and September, 1929.

Q. And there is a sheet on here which says, "Records for months of August and September, 1929, destroyed"?

A. That is correct.

Q. Do you know how they happened to be destroyed?

[fol. 449] A. Well, the new accounting department coming in some time in 1931, they destroyed some of the old records and these happened to be among them.

Q. There was no special reason that you know of for those being destroyed?

A. No. We have most all the days for that particular month that could be summed up, I believe. Most all the days. There may be some missing here and there, as there was with the rest of them. Most of these were copied from the monthly summary at that time.

Q. If there is any question, most of these could be produced right from the daily sheets?

A. Yes, sir.

Q. Let us take the month of August, 1928, on this Exhibit "F". Out here to the left are the words, "Pressing

Department. Plates accepted by examiners". Then, to the right you have columns; one headed "Plates" and one headed "Total" and one headed "Percent". Will you tell the Master what is indicated in that month with respect to the plates accepted by the examiners?

A. The examiners passed as O. K. to the edging department 75,582 plates, which was 72 per cent of the plates that came to them. They rejected 28,538 plates or 27.41 per cent of the plates.

Q. And the details of the plates that you have just said were rejected are shown under the column entitled, "Pressing Rejects", the first item being "Broken 5201"?

A. That is correct.

Q. By the way, is this exhibit prepared in square feet or in plates?

A. This is in plates.

Q. That is in number of plates?

A. That is right.

[fol. 450] Q. Now, then, lower down on that same sheet for August, 1928, you have, "Edging Department. Plates accepted by examiners". How many plates were accepted in that month by them?

A. The edging department—accepted 54,956 plates as being O. K.

Q. Or what percentage?

A. Or 87.91 per cent.

Q. Now, referring to the edging department in the month of August, 1928, how many plates were examined by the examiners of that department?

A. 54,956 plus the 7561.

Q. And how many of those were accepted?

A. 54,956, or 87.91 per cent.

Q. And how many of those were rejected?

A. 7561, or 12.09 per cent.

Q. In other words, out of the total plates examined in the edging department, 54,956 were accepted and 7561 were rejected?

A. That is correct.

Q. And does this exhibit show the detail making up the 7561 rejects?

A. It does.

Q. For example, the first item is "Let Goes 1158". That means there were 1158 plates rejected for let-goes?

A. That is correct.

Q. And without taking the time to go over the other sheets, are the other sheets of the exhibit prepared in the same way?

A. They are.

Q. Now, as I understand it, these sheets of this exhibit are not cumulative as between the pressing department and the edging department?

A. No, they are not.

Q. It doesn't mean to say on this sheet for August, 1928, that the plates which were edged and part of which [fol. 451] were rejected were a part of the same plates that were described above under the pressing department matter?

A. They don't represent the same lot of plates necessarily.

Q. They do not?

A. No. They simply represent the amount of work done in that department and the plates handled, and the plates handled in this department separately, and there is an accumulation and work in process in each department. Over a long period they check up but for monthly reports they do not.

Q. When you say "that department" you mean the pressing department is one and the edging department is another?

A. Yes, sir. So we would know just what the troubles were.

Q. Have you been familiar with these results as shown by these exhibits taken from your books?

A. Those exhibits were the basis for practically all of the work that I did and the other technical men did on the plant during the first couple of years' operation. We would look over this and see what was the chief cause of difficulties and rejections, and then attempt to eliminate it as quickly as possible.

Q. Did you, yourself, have in mind these various defects and did you, yourself, go around through the plant, beginning early in 1928, trying to run them down and eliminate them?

A. I did.

Q. And did you keep that up continuously?

A. Continuously. Got a daily report corresponding to that each day.

Q. Did you do the best you could to improve this operation?

A. The very best.

Q. And did you work long hours?

[fol. 452] A. Many times right straight through twenty-four hours without leaving the plant, and sometimes longer than that.

Q. Now, then, with this exhibit before you, I want to ask you if you will please place on the record a statement giving the names of the various kinds of defects that you encountered in this operation, in the glass and in the pyralin. Just name them. I understand that each name you will give me means a separate defect.

A. Yes, sir. 1. Separation. 2. Vents. 3. Pyralin digs. 4. Glass scratches. 5. Glass chips. 6. Bows. 7. Bulls Eyes. 8. Waves. 9. Strings. 10. Seeds. 11. Blisters. 12. Stone. 13. Ream. 14. Bloach. 15. Wrong edge work. 16. Wide seam. 17. Smudge. 18. Haze. 19. Oversize. 20. Undersize. 21. Overthickness, 9/32nds. 22. Underthickness, 7/32nds. 23. Slip. 24. Wrong trademark. 25. Burnt (bubbles). 26. Yellow. 27. Sleek (inside). 28. Lint. 29. White pyralin streaks. 30. White spots. 31. Black spots. 32. Smear. 33. Sheeter lines. 34. Hair. 35. Water-mark. 36. Pencil mark. 37. Bloom. 38. Included pumice. 39. Pyralin dust. 40. Grease. 41. Gelatin haze. 42. Short pyralin. 43. Broken plates. 44. Pyralin scratches. 45. Out of square. 46. Inside stickers. 47. Diffraction lines. 48. Light blue streaks. That is practically all of them. They name a lot of less important ones.

Q. Well, now, I suppose some of those words are self-explanatory, are they not?

A. Some are.

Q. And some you have already explained?

A. Yes, sir.

Q. By the way, you have given a number in connection with each defect. That is to say, you have given forty-eight defects in all?

A. Yes, sir.

[fol. 453] Q. For example, take bulls eyes, which you gave the number 7. That didn't mean you found seven bulls eyes in your operations?

A. No, indeed.

Q. It meant bulls eyes was the seventh category of defects. Is that correct?

A. That is correct.

Q. And so on throughout?

A. Yes, sir.

Q. I suppose the separation and adhesion are clear?

A. I didn't cite adhesion because I thought it would be difficult to explain the difference between them, although we classify them as two different things.

Q. Well, leave that out. Vents you have described?

A. Yes.

Q. And glass chips and bows are self-explanatory?

A. Bows mean the bowed plate after laminating so it won't fit into place. Bulls eye is hollow spot ground in glass trying to remove a scratch.

Q. Does it look like a bulls eye?

A. It causes a hollow spot in the glass which disturbs vision. That is an old name that comes to us through glass and is familiar to all people dealing in glass.

Q. Waves. Does that mean wavy?

A. Wavy glass and wavy pyralin. Wavy laminated glass is the result of wavy pyralin.

Q. What does strings mean?

A. A defect in glass, a bubble, we will say, drawn out long or a little piece of hard glass, like a stone, leaves a streak in the glass itself.

Q. What is seed?

[fol. 454] A. Seed is a small bubble.

Q. What is blister?

A. A larger bubble in the glass.

Q. What is stone?

A. Stone is a piece of the metal—a piece of material that came through with the glass, which was not melted and it maintains its identity as a little lump in the glass.

Q. What is ream?

A. A long streak on the glass.

Q. What is bloach?

A. Bloach is a term we developed to define a place in your plate where the pyralin didn't contact the glass, leaving a dull area.

Q. Wrong edge work and wide seams. Those are self-explanatory. I suppose the same is true about smudge, haze, oversize and undersize.

A. Smudge isn't necessarily understood. That is something that developed peculiar to safety glass. It had never been heard of in the celluloid business, but it is a peculiar mottle that develops in the celluloid due to the way the thing orientates itself, so it becomes a mottled-like haze in the laminated sheet which is originally in the pyralin sheet but could not be seen without special training until after the sheets were laminated.

Q. What is haze?

A. Haze is a general cloudy condition due to dust-like particles in the celluloid.

Q. I won't speak of oversize or undersize. Here is one marked "7/32nds of an inch." That refers to the thickness of the plate?

A. Yes.

Q. And "over 9/32nds" refers to thickness?

A. Yes.

Q. What is slip?

[fol. 455] A. It means two plates that were supposed to be put one on top of the other have slipped so they didn't register around the edges.

Q. What is burnt?

A. It means we put back in the press and tried to repress it so as to remove a defect, and in doing so overheated it to the point where the celluloid escaped, forming bubbles.

Q. Does yellow mean it was colored yellow?

A. Yes. That is the stage before it develops bubbles. If you re-press it once or twice, the celluloid begins to discolor to yellow and is objectionable.

Q. What is sleek?

A. Inside sleek means a tiny scratch on your glass which is laminated on the inside and couldn't be removed, and won't be acceptable to a customer.

Q. It is in one of the inner faces of the glass?

A. Yes.

Q. In the finish?

A. In the laminated.

Q. What is lint? Lint on the surface?

A. Lint is a difficulty that we refer to as pyralin pulling lint from the air and being coated with it.

Q. White streaks and white spots and black spots don't need any definition, do they?

A. No. That is just from a series of causes, one thing after the other.

Q. What is smear?

A. A smear is a peculiar defect in the pyralin as if finger prints had gotten against it, or in making the sheet oil or something got on the sheet, and caused it to appear as if you tried to wipe a little oil off the sheet and didn't get it all off, but it is inside your plate and causes the defect.

Q. What are sheeter lines?

A. Sheeter lines is the line that results when you cut off the sheet of celluloid from the big block. It is cut off by a [fol. 456] knife, and as this knife cuts over the block of celluloid, cutting off the sheet, it leaves a multitude of little hills and valleys in the sheet as it passes along. Sometimes it would press out and sometimes it wouldn't press out, and when it wouldn't press out naturally it is objectionable.

Q. Defect hair means——

A. From the operators. That was a troublesome thing. In the operating room it was very, very hot that summer and operators simply had hair come from their head and get between plates and caused an appreciable number of defects. We found out later on there were a certain number of people in there that were shedding, and that is what the trouble was.

Q. This was a real, substantial defect, was it?

A. Absolutely.

Q. When hair gets between the sheets of laminated glass that cannot be removed?

A. No.

Q. Did you endeavor to remedy that by making the men wear caps?

A. By making the men wear caps, and we removed the men having scalp trouble.

Q. What is bloom?

A. Bloom means a plate in which water has gotten in to the point where it causes a white, precipitated pyroxylin, which is a component in making celluloid. That is a term brought over from the celluloid industry.

Q. What is pumice—this pumice dust or powder?

A. It got between the plates. Fell off the edges sometimes when a man was laying the plates up. Sometimes a

little piece was sticking on the edge of the glass and fell off.

Q. What is pyralin dust?

A. Pyralin dust is a defect that has given a lot of trouble. It is a peculiar foreign matter in the celluloid that tends to reflect light and sparkle and cannot be seen through [fol. 457] ordinary light except when you are looking from a dark place out and have a beam of light strike it. It is something like haze, only haze is dull and this sparkles. Some of the laminating companies call it star dust.

Q. What is grease?

A. In our equipment, little particles of grease, sometimes almost invisible, which fall on the plate; but in the pressing operation a thing almost invisible would spread out and cause a reject.

Q. What is gelatin haze?

A. When you are spraying gelatin if you are not careful, there is a possibility it will co[illegible] and dry out from the time it leaves the spray gun [illegible]til it hits your plate and set up in a lot of thimbles all over the surface and wouldn't spread out. They would maintain their identity and result in a minutely spotted plate of laminated glass.

Q. Short pyralin?

A. Pyralin slipped so it didn't come out to the edge of your plates.

Q. And the defect known as "broken," and the defect called "Pyralin scratches," and the defect "Out of square." None of those need description?

A. I think not. The pyralin scratches, of course, were in the pyralin and couldn't be pressed out.

Q. What is the defect called "Inside Stickers"?

A. We called the little piece of adhesive paper used to hold the sandwich together the sticker, and sometimes our pyralin was quite wavy, so when you put the sticker around, the wave in the pyralin caused the glass to be apart a quarter of an inch, and when you put your vacuum on the sticker had to fold, and instead of folding out it would fold in, and in coming down it would either cause a break or be inside the plate so it would be rejected.

Q. What were diffraction lines?

[fol. 458] A. Diffraction lines are lines caused by the lines in your celluloid. They disappear to the naked eye, but when a beam of light strikes it, like a headlight coming

from an automobile, it causes a diffraction grating and makes the approaching headlight appear like a strong searchlight pointing to the sky, upward and downward from its source. An intolerable condition from a driving standpoint and one that gave us a great lot of rejections and a lot of trouble.

Q. Glass finished spoiled.

A. I didn't mention that.

Q. Light blue streaks. Was that in the pyralin?

A. Light blue streaks was in the pyralin, as if the color wasn't worked out completely.

Q. I will now ask you to turn your attention just for a moment to Defendants' Master Exhibit "F," and I ask you to state whether or not in your opinion the difficulties that you had in developing this process and in making this glass which you have described to the Master, whether or not those difficulties were sufficient in your opinion to account for the rejects that are shown in this exhibit?

A. They were, absolutely.

Q. And in point of fact they did?

A. They did. There are some in that exhibit that are not mentioned in this list. You will find a few marked that are not shown on here.

Q. That is, there are some defects that are in the Defendants' Master Exhibit "F" that are not included in this category you have just given us?

A. Yes. They would be minor classes.

Q. Mr. Sherts, have you here in the Master's presence the original reports from which this Exhibit "F" has been made up?

A. I have.

Q. And they are tendered to the other side for examination if they wish?

A. Yes.

[fol. 459] By Mr. Christy:

Q. Including the daily reports?

A. Yes.

By Mr. Smith:

Q. How many years' experience have you had in connection with the practical operations of plants in the manufac-

ture of celluloid and in this laminated glass manufacture altogether?

A. Since February, 1919, to the present day.

Q. You have been giving your entire time in business hours to that work?

A. I have.

* * * * * * *

Q. When you made these moves was your department operating under the stress of being obliged to fill actual orders on your books?

A. It was.

Q. Were or were not these moves made in the attempt to improve the operations of the plants?

A. They were made to improve operating conditions so we could reduce our losses.

Q. When you began to work up there in this plant, in the early part of 1928, how many men approximately were employed?

A. About half a dozen.

Q. Then do you remember about when you began to operate on the Fisher Body orders?

A. I believe about the latter part of May, 1928.

Q. Well, shortly before, say a month before you began on those orders do you remember how many men you were employing?

A. We had approximately twenty.

Q. And say a week or so before beginning these orders how many?

A. Probably fifty.

[fol. 460] Q. And how many men did you have to employ when you got running full on these automobile orders?

A. By the end of June, as I recall, we had approximately five hundred.

Q. That was June, 1928, was it?

A. Yes, June, 1928. We went beyond that, as I recall, several hundred more, at the high point—probably seven hundred—but the big jump was from the beginning of June to the end of June where we took on approximately four hundred and fifty men, as I recall.

Q. Using your experience as a practical operating man, will you tell the Master whether or not it was a difficult operation to step up your labor force to that extent?

A. With a new industry and not being able to pick any men with experience in this laminating or in the new industry, and without at least a skeleton crew of men trained in the technique, it was a most difficult situation and almost impossible to get organized in a way that we usually think of an organization.

Q. Now, you have spoken about your step up in labor. What step up in production did you make in this short period of time? I mean comparing immediately before you began on these Fisher Body orders as compared with the ttime after you began.

A. Well, we had been producing approximately 150 plates a day before we started on this contract business, and afterwards we had to get up to a production of approximately 5000 plates a day some days in order to meet shipments of approximately 4000 plates a day.

Q. Were you called upon to make shipments of 4000 plates per day?

A. Yes.

Q. Will you tell the Master from your experience as a practical man whether or not that is a difficult operation to perform, to step up your production that way with a new industry?

[fol. 461] A. In my opinion it is almost a miracle; beyond any estimate of what is humanly possible.

Q. In order to produce these 4000 plates per day, state whether or not you had to process more plates than that in order to get that output.

A. I remember distinctly that it became practice with us to order 20 per cent. more glass than was required on the order, knowing the terrific losses that we were incurring, and at the time we were forced to produce approximately 4000 a day we were actually bagging and pressing approximately 5000.

Q. What happened to the difference between the 5000 and 4000?

A. That represented rejects, as is shown in these figures submitted by the accounting department.

Q. One of the items claimed as an expense item by the Duplate Corporation in this accounting is a commission paid to the Pittsburgh Plate Glass Company. Was there any selling expense to the Duplate Corporation other than that commission?

A. Not that I know of.

Q. In your experience as a practical operating man, is it or is it not the practice to pay either a commission or some other selling expense?

Mr. O'Shea: I object to that on the grounds that it calls for a conclusion. I think we all know some selling expense is necessary to sell goods.

The Master: We will hear it subject to your objection, Mr. O'Shea.

Mr. O'Shea: Exception.

A. It is the practice to pay a commission or some selling expense.

Q. Do you know what commission was paid to the Pittsburgh Plate Glass Company?

Mr. O'Shea: That is already in the record.

[fol. 462] Q. (Continued.) Mr. O'Shea has called my attention to the fact the record in this case already shows the Pittsburgh Plate Glass Company received a commission first of five per cent. and later of three per cent. on the product sold by it for the Duplate Corporation. Will you state whether or not in your opinion, as a practical man, that was a reasonable commission to be paid for selling expenses?

Mr. O'Shea: Same objection, calling for a conclusion.

The Master: We will receive it subject to the objection.

Mr. O'Shea: Exception.

A. In my experience it would seem to be a very reasonable selling expense.

Q. If you had not availed yourselves of the selling organization of the Pittsburgh Plate Glass Company, what would you have had to do to sell your own product?

Mr. O'Shea: Same objection.

The Master: Same ruling.

Mr. O'Shea: Exception.

A. We would have had to organize our own department and maintain it.

Q. Would that have been an expensive proposition?

A. It would have been.

By Mr. Christy:

* * * * * * *

Cross-examination.

By Mr. O'Shea:

Q. Just a question or two on this original record from which Defendants' Master Exhibit "F" has been taken. [fol. 463] These records in this book are an original record of the Duplate Corporation?

A. They are, yes, sir.

Q. And they are the daily reports to you?

A. Daily reports, and then at the end of the month there is a summary for the month in most cases.

Q. Is that summary for the end of the month what is known in your organization as Schedule "J"?

A. No.

Q. These Schedule "J's", which have been marked in evidence here as Master Exhibit 8 for identification, differ from the original records from which Defendants' Master Exhibit "F" have been taken. Is that correct?

A. The Schedule "J" is in feet and this is in plates. This was not an accounting used in the accounting footage.

Q. But your accounts were kept on the basis of footage?

A. Yes, sir.

Q. And do these sheets, Master Exhibit "F"; check up with Schedules "J" except that one is stated in plates and the other is stated in feetage?

A. I would say they do.

Q. You are sure of that?

A. You would have to ask the accounting department.

Q. You don't know then whether they do check up or not? Is that it?

A. Not that they check up absolutely; in general they do.

Q. They ought to in general in your opinion?

A. Yes, sir; very, very close.

Q. Now, these sheets contained in Master's Exhibit "F" do not contain all of the rejects from the beginning to the very end of the process, do they?

A. They contain our plate rejects.

[fol. 464] Q. These sheets seem to start with the pressing department.

A. That is correct.

Q. There were rejects then——

A. Glass and pyralin rejects. This is Duplate—laminated.

Q. This has to do only with Duplate or laminated, under the definition of Duplate or laminated arriving at that character of glass in the pressing department?

A. Yes, sir.

Q. So there were other rejects than these which would be included in Schedule "J"?

A. Yes, sir. That does not include the customers' returns.

By Mr. Smith:

Q. What does not include the customers' returns?

A. Exhibit "F" does not include the customers' returns.

By Mr. O'Shea:

Q. This Master Exhibit "F" is not set forth in dollars and cents?

A. No, sir.

Q. And is it tied in with any controlling records at all of the Duplate Corporation? Do you understand what I mean by "tied in"?

A. You mean with the accounting records they show in form "J"?

Q. Yes.

A. I think not.

Q. But it is taken from a supplemental record of the Duplate accounting system?

A. Production.

(Adjournment taken until Tuesday, February 9, 1932, at 11 o'clock A. M.)

[fol. 465] Pittsburgh, Pennsylvania, Tuesday, February 9, 1932.

Met pursuant to adjournment.

Present: G. Dixon Shrum, Esq., the Master; Ambrose L. O'Shea, Esq., of counsel for the plaintiff; Marshall A.

Christy, Esq., William Watson Smith, Esq., L. E. Hickman, Esq., counsel for the defendants.

COLLOQUY

Mr. Smith: If the Master please, Mr. O'Shea had started with just three or four questions on cross-examination, and we discover that we have forgotten to ask Mr. Sherts a number of questions we should have asked him, and if it is agreeable to you and to Mr. O'Shea, if Mr. O'Shea will suspend his cross-examination now, we will go ahead with the direct examination and then Mr. O'Shea can resume his cross-examination.

The Master: That is perfectly agreeable.

Mr. O'Shea: I wish to file two additional objections to the report as follows:

ADDITIONAL OBJECTIONS TO DEFENDANTS' ACCOUNT

18. Plaintiff objects to the inclusion in "Defendants' Statement of Account" of the cost items credited to the defendants and charged against the plaintiff for glass, for the reason that included in such amounts charged for glass is a profit which accrued to the co-defendant and joint infringer, Pittsburgh Plate Glass Company.

19. Plaintiff objects to the inclusion in "Defendants' Statement of Account" of the cost items credited to de- [fol. 466] fendants and charged against plaintiff for pyralin, for the reason that included in such amounts charged for pyralin is a profit which accrued to du Pont Viscaloid Company.

Mr. Smith: Defendants object to these additional objections numbered "18" and "19", for the following reasons: first, because they are generally incompetent and irrelevant; second, because they are not warranted under the pleadings in the case; third, because they are not warranted under the decrees in the case; and fourth, because they were not taken until after the plaintiff had closed its prima facie case.

The Master: These items will be included for the present, subject to Mr. Smith's objection.

Mr. Smith: Exception, please.

Mr. O'Shea: In connection with these objections, I call to the Master's attention the prayers of the supplemental bill of complaint and the interlocutory decree entered thereon, and particularly, with respect to Clauses 3 and 4, and in connection with Clause 4 of the interlocutory decree, the plaintiff calls the Master's attention to the fact that the Master is directed therein to call upon the Pittsburgh Plate Glass Company to account for all "profits, gains and advantages which it, the said Pittsburgh Plate Glass Company, has received or which have accrued to it from the said infringement upon the exclusive rights of the plaintiff under Claim 12 of said Letters Patent, and also the damages which the plaintiff has suffered because of said supplemental defendant's infringement upon Claim 12 of said Letters Patent of the United States, No. 1,182,739." The plaintiff, therefore, in accordance with said supplementary [fol. 467] decree, now requests the Master to call upon the supplemental defendant, Pittsburgh Plate Glass Company, to file an account showing what, if any, profits it has made in carrying on this infringing business.

Mr. Christy: I think it necessary to precede the objection which I am about to make by a statement of fact.

At the conclusion of the taking of the testimony for the plaintiff on this accounting last June, it was substantially understood between the plaintiff's counsel and myself that, subject to a review by counsel at his leisure of the testimony that had been taken, the prima facie proofs on behalf of the plaintiff had been completed, and it was further understood that I should be prepared to proceed with the proofs in defense during the month of September, and that on my having a meeting set for that purpose plaintiff's counsel would formally close his prima facie proofs.

I had prepared to proceed, in large part, although not completely so, when the plaintiff filed its supplemental bill bringing in the Pittsburgh Plate Glass Company as a party defendant. Considering that this changed the situation, I told the Master, and I believe wrote to plaintiff's counsel, that the situation had so changed that I did not consider that the defendant should proceed with its proofs until the matters raised by the supplemental bill had been disposed of. This was done by the decree entered on December 5th last. Then, in connection with further procedure, I received

a letter from plaintiff's counsel dated December 28, 1931, which I am sure he will allow me to insert at this point:

[fol. 468] "December 28, 1931.

Marshall A. Christy, Esq., Farmers Bank Building, Pittsburgh, Penna.

DEAR MR. CHRISTY:

I wish to apologize for the delay in replying to your letter of December 16th but I have been tied up in the preparation and trial of a case in our District and this is my first opportunity to answer.

As I recall the last hearing, it was that you were to fix a date for the taking of your testimony and that at the beginning of the next hearing I would close my case. So far as I know now, I will have no further testimony to put in. Therefore, it is for you to determine when the next hearing shall be, subject of course to my feeling that it ought to be within the very near future and at the very latest, some time in the month of January.

It does seem to me that there has been time enough to synchronize the witnesses of the Pittsburgh Plate Glass Company for a definite date. In any event, I desire exceedingly that you do now fix a definite date for the next hearing at which time I will close my case and I shall expect you to proceed with the taking of your testimony.

Wishing you the compliments of the Season, I remain

Yours very truly, Ambrose L. O'Shea."

Under this urgency, I proceeded to complete, so far as I could, the preparation of defendants' proofs when it was decided, with great pleasure on my part, that I should have [fol. 469] the assistance of Messrs. Smith and Hickman. This necessarily delayed matters for a short time, and proofs were finally commenced, as the record shows, on January 27, 1931. At that meeting, more than a month after the decree had been entered upon the plaintiff's supplemental bill, the plaintiff definitely closed its prima facie proofs.

I therefore object to the request at this time for the reason that plaintiff, being fully advised in the premises, did definitely close its prima facie proofs under both decrees

on January 27th. Defendants have prepared their case to meet proofs made, and it is submitted that plaintiff should not be allowed at this time to practically reopen its case and proceed to take further prima facie proofs on this account. Defendants certainly had a right to rely upon the action of plaintiff's counsel in closing his prima facie proofs at the time he did.

Mr. O'Shea: In connection with Mr. Christy's statement, first with respect to the filing of the exceptions, the Master's attention is called to the original exception No. 17, where the plaintiff reserved the right to file further objections from time to time during the hearing as it may be advised are necessary or proper in view of the testimony that may be adduced at such hearings.

It is the recollection of counsel for plaintiff that at the closing of testimony on June 10, 1931, the understanding was that plaintiff's case had not then been closed but that at the convenience of counsel for defendant, when and as he should find it convenient to himself to proceed with his testimony, that plaintiff should have the right to introduce such additional testimony or exhibits as it might deem desirable and proper, but that it was the opinion of counsel [fol. 470] for the plaintiff at that time that there would be no further oral testimony given on behalf of the plaintiff.

At the resumption of the taking of testimony on January 27, 1932, counsel for plaintiff offered in evidence as a part of its case the supplemental bill of complaint and the answer thereto, the order allowing the filing of said supplemental bill of complaint and the interlocutory decree entered by the Court on such supplemental bill of complaint and answer. That interlocutory decree gives specific directions to the Master, and it is not plaintiff's understanding that the account now called for from the Pittsburgh Plate Glass Company is a part of the prima facie proof of the plaintiff, but is an additional pleading which the District Court has called upon the Master to ask for.

Mr. Christy: Then why did you not ask for this order before you closed your prima facie case?

Mr. O'Shea: The decree speaks for itself. It seems to me that it does ask for this order.

Mr. Christy: Mr. Master, I object for the reasons stated.

Before making any further objection, I would ask of plaintiff's counsel the nature of the statement to be made

by the Pittsburgh Plate Glass Company for which he asks. The statement already filed by the defendant, Duplate Corporation, shows on its face that no profits have been gained from the infringing business. Accepting this statement as we must, for purposes of the present application by the plaintiff, and in order to save time, I think we should be enlightened as to the character of the statement which he desires. That is to say, if the statement already made [fol. 471] shows no profits at all, I do not see exactly what further statement on that subject he desires.

Mr. O'Shea: It seems to counsel for plaintiff that the supplemental interlocutory decree on the supplemental bill is specific as to what the Pittsburgh Plate Glass Company is called upon to do. However, counsel, as a courtesy to Mr. Christy and in answer to his specific question, now states that since the interlocutory decree in the supplemental bill finds the Pittsburgh Plate Glass Company to be a joint infringer with the Duplate Corporation, as stated in Clause 1 of said interlocutory decree upon the supplemental bill, and since the Pittsburgh Plate Glass Company, as is evident from the account heretofore filed and marked "Defendants' Statement of Account," has supplied its joint infringer, Duplate Corporation, with large quantities of plate glass from which it is apparent that it has derived a profit, which profit was charged in its selling price to its joint infringer, Duplate Corporation, the plaintiff's request is to the effect that the account now to be filed by Pittsburgh Plate Glass Company show whatever profits it, the Pittsburgh Plate Glass Company, made from the sale and delivery of such large quantities of plate glass to its joint infringer, Duplate Corporation.

Mr. Christy: I now renew my objection to the reopening of the case at this time for the purpose stated. I repeat the objections made by Mr. Smith at the outset to the first statement of my opponent. I make the further objection:

The Pittsburgh Plate Glass Company has been held by the decree, as has been just stated by my opponent, as a joint infringer with the Duplate Corporation, and therefore as principal infringer. My opponent now seeks to hold it, [fol. 472] not as a principal infringer, but only as a contributory infringer. It cannot well be both. Having been charged by the supplemental bill and found by the decree to have been a principal infringer, the plaintiff is not en-

titled to the additional accounting claimed by the eighteenth and nineteenth objections now sought to be added.

(Recess taken until two o'clock P. M.)

Afternoon Session

(Arguments by counsel.)

Mr. Smith: If the Master please, before the Master reaches a decision upon this important question, we think you should have before you, in a very brief statement of a single witness, the facts with respect to the ownership of the raw materials going into the production of plate glass by the Pittsburgh Plate Glass Company.

We, therefore, offer to prove that the plate glass is made mainly, as I understand it, from three articles: first, soda ash; second, sand; and third, lime. That all three of those commodities are, in themselves, marketable commodities in the form in which they exist before they are put into plate glass at all, and that the Pittsburgh Plate Glass Company, either directly or indirectly, owns the soda ash, sand and lime which go into this product.

Mr. O'Shea: If you tell me it is a fact, I will admit it.

Mr. Christy: Yes, that is a fact.

STIPULATION

It is stipulated between counsel for the parties that the facts with respect to the soda ash, sand and lime, and the [fol. 473] ownership thereof by the Pittsburgh Plate Glass Company, either directly or through the form of 100 per cent. ownership in a subsidiary corporation, are correctly stated by the offer on the record.

Mr. O'Shea: Counsel for plaintiff admits those facts as recited and referred to in the stipulation, except that he reserves his right and now objects to the materiality of those facts.

(Discussion off the record as to taking of further testimony at this time.)

Mr. O'Shea: Counsel for plaintiff objects to the adjournment of the taking of the testimony on the phases of the account that are already before the Master pending filing

of briefs and the determination of this law point which is now raised, namely, with respect to the Pittsburgh Plate Glass Company's responsibility for the profits it received and charged against the plaintiff, and in that respect states that it seems to him that the testimony might well proceed on the phases of the accounting which already raise a direct issue between the parties.

Mr. Smith: If the Master please, we assume that it is conceded in this case that one-eighth inch plate glass and pyralin sheets such as were used here were both marketable products at the time of this alleged infringement. If that is not a fact, we desire to prove it, which we can do in a minute.

Mr. O'Shea: We do not admit that.

(Adjournment taken until Wednesday, February 10, 1932, at 10:30 o'clock A. M.)

[fol. 474] Wednesday, February 10, 1932.

Met pursuant to adjournment.

Counsel present as before.

H. B. Higgins, a witness produced on behalf of the defendants, having been duly sworn, testified as follows:

Direct examination.

By Mr. Smith:

Q. Mr. Higgins, where do you live?

A. In Pittsburgh.

Q. And are you an officer of the Pittsburgh Plate Glass Company?

A. Yes.

Q. What office do you hold?

A. Vice-president.

Q. And how long have you been vice-president?

A. About four years.

Q. Were you connected with the company before that?

A. Yes.

Q. In what capacity?

A. General salesmanager.

Q. How long were you general salesmanager?

A. About ten or eleven years.

Q. Before you were general salesmanager were you in the sales department?

A. I was manager of the warehouse at Kansas City.

Q. Over what period of years have you been connected with the Pittsburgh Plate Glass Company in these various capacities—approximately?

A. About twenty-seven years.

[fol. 475] Q. Do you know the product which has been described as plate glass one-eighth of an inch thick?

A. Yes.

Q. Will you please tell the Master whether or not on January 1, 1928 and continuing through the accounting period, which runs to June 1, 1930, plate glass one-eighth of an inch thick was a marketable product?

A. Yes.

Q. During what period of time prior to January 1, 1928, had the Pittsburgh Plate Glass Company been making plate glass one-eighth of an inch thick?

A. We have always made it.

Q. As long as you have been connected with the company?

A. As long as I have been connected with the company.

Q. State whether or not during this accounting period and prior thereto there was a substantial demand for this product.

A. Yes, there always has been a substantial demand for one-eighth inch. One of the first experiences I had in selling was in Minneapolis warehouse, probably 1908 or 1909, when I sold one-eighth inch plate to the Twin City Rapid Transit Company for use in their street cars. It has always been used in quite large quantities for mirrors, in show case doors, in book cases like that. (Indicating.)

Q. Like these here?

A. Like these here. That doesn't happen to be plate glass. In toilet mirrors, vanity cases, small ovals that you may often have seen and small circulars set in pyralin and sometimes in ivory; in glazing operations it is used extensively and always has been.

Q. What do you mean by "glazing operations"?

A. Glazing buildings.

[fol. 476] Q. Do you mean putting in windows?

A. Yes, putting in windows.

Q. Had this plate glass one-eighth inch thick any advantage in glazing operations?

A. Yes, in certain types of operations it has quite an advantage. Wherever the quality of plate and the reflection from the surface of plate is desired but weight is important. It requires, of course, just half the counter-weight; consequently, it can be used with a smaller box frame in a double hung window, and is particularly advantageous in casement windows which are hung on one side and swung open. The light of glass does not exert such a strain on the sash, and in time heavy plate glass will spoil a window sash that is glazed as a casement window.

Q. How thick was the heavier plate glass that was used in plate glass windows?

A. One-fourth of an inch was the standard thickness.

Q. There has always been, I suppose, a large market for that?

A. Yes, that is the standard thickness and always has been. That is the thickness you see on store fronts.

Q. As compared to that, this one-eighth inch thick glass would be just half as heavy?

A. Half as heavy.

Q. What about show cases? Have you used it in that?

A. It has been used always on the backs of show case doors, which are usually glazed with mirrors. The frame of the show case is light, of course, and consequently a heavy light of plate glass is not satisfactory there. The Pennsylvania Railroad has always within my recollection used it exclusively in all their passenger cars, and there has never been a year that we have not sold them large quantities whenever they were building new cars or quantities [fol. 477] for replacements—take care of their breakage. The New York Central have also used it.

Q. Have you sold to the New York Central?

A. I think we have. I am speaking from general recollection. At one time different railroads specified it for their cars, and there again the weight of the sash in which it was glazed determines the thickness of the glass. You will find, if you look at a street car when you go outdoors, the front end of all street cars in Pittsburgh is glazed with one-eighth inch plate glass.

Q. During what time has this demand for one-eighth inch plate glass existed on the part of the railroads? How far back?

A. Farther back than I can remember. I came to Pittsburgh in 1917, and it was a large business then and existed prior to that time.

Q. When did you adopt your present process of making one-eighth inch thick plate glass at Creighton?

A. The plant was started in 1924.

Q. Do you know when it went in operation?

A. It began operation that year.

Q. And do you still follow the same process in that plant for making one-eighth inch plate glass?

A. Yes.

Q. Can you tell the Master what your production of one-eighth inch plate glass was for some years prior to 1928? You can use that memorandum.

A. I don't think I have anything prior to 1928, Mr. Smith—Yes.

Q. Beginning with the year 1927, will you please tell the Master what the production of one-eighth inch plate glass was by the Pittsburgh Plate Glass Company in each year down to 1931, inclusive?

A. In 1927, it was 1,858,323.

[fol. 478] Q. Start in 1926.

A. 1926 was 1,161,828 feet; 1927, 1,858,323; 1928, 9,791,534; 1929, 11,591,203; 1930, 10,214,250; 1931, 9,012,215.

Q. Now, Mr. Higgins, this accounting period ran from January 1, 1928, to May 31, 1930. That is two and one-half years about. As I got those figures, your production of one-eighth inch plate glass during that accounting period was approximately twenty-five million square feet. Is that right?

A. That is approximately correct.

Q. Now, a certain amount of that in that accounting period was used by your own company in making laminated glass?

Q. What happened to the rest of it?

A. It was sold to our warehouses, jobbers, mirror manufacturers—to the trade in general who could use it.

Q. Now, of that production in the accounting period of about twenty-five million square feet, would you tell us, in your opinion, about how much of that in feet was sold actually to customers—not merely kept on stock somewhere?

A. I should suppose 95 per cent. perhaps—90 per cent. It is hard to tell.

Q. You could not keep a stock of glass like that in stock?

A. No. Of course, we made it to sell, not keep, and some of it probably was in stock at the factory warehouse; some was shipped to our jobbing warehouses in stock, but, of course, the great quantity of it was actually sold to buyers.

Q. And you think 90 per cent. of it was so sold?

A. I would consider it.

Q. Now, did your company ever feature the sale of one-eighth inch plate glass by advertising it?

[fol. 479] A. Yes.

Q. When was that?

A. That was in 1928—in the fall.

Q. And do you remember how much money you spent for that purpose?

A. We appropriated $25,000 for advertising one-eighth inch plate.

Q. Prior to this accounting, was one-eighth inch plate glass quoted in your price list to customers?

A. Yes.

Q. Do you remember whether it was quoted higher or lower than other glass?

A. It was for a long period quoted at 15 per cent. above the quarter-inch price; gradually the price came down after we started to make it at Creighton, and for the last four years—I suppose five years—it has been quoted at the price of quarter-inch, but for many years there was a standard premium of 15 per cent., and it was generally quoted in our price lists.

Q. Your improved process at Creighton allowed you to reduce that price?

A. Yes.

Q. Now, outside of your own production of glass here in the United States, was there any market in one-eighth inch plate glass that was imported from abroad?

A. Yes, there was a large market.

Q. How large did that market run, approximately, back in the early 90's?

A. From three to five million feet a year.

Q. Of one-eighth inch plate glass?

A. Yes.

Q. And that was imported from abroad and sold here?

A. Sold in the United States.

Q. Did other American companies besides the Pittsburgh Plate Glass Company, during this period you have spoken [fol. 480] of, make and sell one-eighth inch plate glass?

A. Yes.

Q. It was a recognized marketable commodity, as I understand your testimony?

A. Recognized, marketable commodity, and carried in stock by jobbers and daily bought and sold.

Cross-examination.

By Mr. O'Shea:

Q. Mr. Higgins, the standard practice in automobile production was to use one-fourth inch plate glass prior to 1926, was it not?

A. One-fourth and three-sixteenths.

Q. One-fourth and three-sixteenths was the standard practice?

A. That is correct.

Q. Do you recall from your memory whether you sold any one-eighth inch plate glass to any of the automobile manufacturers for use as windshields or windows of their cars?

A. I don't think so.

Q. You think you did not sell any?

A. I think not.

Q. There was no sale of one-eighth inch plate glass then to the automobile industry to the best of your recollection?

A. No. That is correct. I think, Mr. O'Shea, that there was probably some glass sold to curtain manufacturers, where a thin plate was wanted in the rear light of an open car, but generally speaking the demand from the automobile trade was not for one-eighth inch glass.

Q. The standard demand was for one-fourth or three-sixteenths.

A. Yes.

[fol. 481] Q. Your company sold quantities of this standard one-fourth or three-sixteenths plate glass to the automobile manufacturers of the United States, did they not?

A. Yes.

Q. Considerably greater in volume in 1926 than the 1,161,828 square feet of one-eighth-inch plate glass that you testified was sold on the market generally for other purposes than automobile?

A. You mean the volume from automobile manufacturers was greater than that?

Q. Yes.

A. Very much.

Q. And that is true as to 1927, namely, that the volume sold to automobile manufacturers—volume of one-fourth and three-sixteenths plate glass sold to automobile manufacturers—was much greater than the volume that you testified with respect to the one-eighth-inch plate glass, which amounted in 1927 to 1,858,323?

A. Yes.

Q. The same condition was true, was it, with respect to 1928?

A. Are you asking me now, Mr. O'Shea, about our sales to the automobile manufacturers or the consumption of glass?

Q. I am asking you about your sales first.

A. I would have to check up to see just what we did sell to the automobile manufacturers in '28 to answer that.

Q. Is there any doubt in your mind that the volume of sales of one-fourth-inch plate glass in 1928 fell off sharply?

A. To the automobile manufacturers?

Q. To the automobile manufacturers.

A. I would want to look at the records to answer that, if I get your question.

[fol. 482] Q. I will repeat my question to see if you did get it. Is there any doubt in your mind but the one-fourth-inch size plate glass sales to automobile manufacturers fell off sharply in 1928?

A. As compared with '27?

Q. Yes, as compared with 1927.

A. I should have to look at the records to answer that.

Q. It is a fact, is it not, that the automobile manufacturers began to demand from your company this laminated glass in 1928?

A. No.

Q. Didn't you sell a considerable amount of laminated glass in 1928 to the automobile manufacturers?

A. Yes, we sold some, but the automobile manufacturers were not demanding it. We were trying to sell it to them. There was no demand for it at that time.

Q. They gave you orders for it, did they not?

A. We worked for some orders and sold some glass, but

there was no demand, Mr. O'Shea, for laminated glass in 1927 and 1928.

Q. I am talking about 1928.

A. In 1928 there was no demand for laminated glass.

Q. But the fact is your records here show that you sold some 1,181,147 feet in 1928?

A. Yes.

Q. You actually sold that to the automobile manufacturers, according to your record?

A. If that is what the record shows.

Q. We will assume that is what the record shows. And yet you say there was no demand for this?

A. In the ordinary sense, there was no demand for that glass. We were undertaking to sell it. There was opposition to it. The automobile manufacturer did not want to put it in and we were making sacrifices trying to sell it. I [fol. 483] am merely trying to avoid any misapprehension concerning your question and my answer to it. We were selling glass but there was no popular demand for it from the automobile manufacturers, and I think you will find, if you go back in that record, that a great percentage of that business was sold to the Cadillac and La Salle—to one automobile manufacturer.

Q. You were selling to Chrysler in 1928, were you not?

A. For a short time before they dropped it.

Q. When did they drop it?

A. Shortly after they started to use it, because there was no demand for it.

Q. When did they start to use it?

A. I wouldn't want to say, Mr. O'Shea, but I imagine some time in 1928 or 1929.

Q. Your records show you were selling it to the extent of 54,000 square feet a month in the month of November to the Chrysler Corporation.

A. Will you follow that along and see what it says in subsequent months?

Q. Is it not a fact that in November, 1928, you sold to the Chrysler Company 54,712 square feet?

A. I am sorry my memory isn't good enough to corroborate that.

Q. Is your memory keen enough to enable you to remember whether you sold to the Hudson Company in November, 1928?

Mr. Smith: I suggest, Mr. Master, it is hardly fair to examine the witness on figures without showing him the figures.

Mr. O'Shea: You examined him on figures without showing him the figures.

Mr. Smith: He had a memorandum in his pocket. Show him those figures if you want to examine him on them.

[fol. 484] (Statements handed to witness.)

Q. (Question read.)

A. Yes.

Q. Selling in that same month to the Studebaker Company, were you not?

A. Yes.

Q. The fact is, is it not, that you were selling through 1929 to those same companies?

A. The facts are, Mr. O'Shea, that some of this business we got and some of it we lost, and I really don't remember the details sufficiently to answer your questions. I will be glad to go through the records and answer them.

Q. Are you familiar as to whether there was a demand for laminated glass in 1929 from your company by the automobile manufacturers?

A. Not generally there was not.

Q. Does your memory enable you to determine whether or not you sold some 2,301,771 square feet in 1929?

A. Whatever the records show.

Q. Well, can you tell whether that is approximately correct or not?

A. I would think it might be.

Q. And yet you say there was no demand for this glass by the automobile manufacturers in those years?

A. In the ordinary sense of the word, there was not a demand by the automobile manufacture trade. We were undertaking to introduce this product with the automobile manufacturers in the face of their opposition, and it would not be correct to say that there was a demand from the automobile manufacturers.

Q. What is your definition of a demand in the ordinary sense, Mr. Higgins?

A. A demand I would consider to be a call by the ultimate consumer for the product.

[fol. 485] Q. Well, if they give orders, isn't that a call for the product?

A. Not in the sense I mean. The buyers of automobile manufacturers, Mr. O'Shea, were not asking the automobile manufacturers to supply cars with laminated glass. That is the point I want to bring out. The buying public were not, as the advertising men say, conscious of laminated glass. They didn't ask for it when they went to buy an automobile; consequently, the automobile manufacturers saw no sales advantage in using it. So that is why I say there was no demand for it.

Q. Well, just how can you tell the buyers were not demanding it?

A. That was my business to know.

Q. How did you make yourself acquainted with that fact?

A. Through our own organization and through my conversations with the automobile manufacturers.

Q. Well, if that be so, if the buyers were not demanding it, how was it possible for you to sell between three and a half and four million of this laminated glass in the years 1928 and 1929?

A. We succeeded in persuading a few manufacturers that it might be an advantage to them to put it in their cars and that it might have an appeal.

Q. Just how did you persuade them?

A. By talking the arguments, by giving them the advantages of it, and sometimes by giving them an attractive price.

Q. Now, the La Salle and Cadillac cars had it as standard equipment in 1929, did they not?

A. Yes, they did.

Q. Did the Studebaker have it as standard equipment in 1929, do you recall?

A. I think they did in windshields only.

[fol. 486] Q. Have any other automobile manufacturers you sold it to had it as standard equipment in the years 1928 and 1929?

A. Chrysler Company put it in their more expensive models, and I think used it for three or four months and then abandoned it because they said there was no advantage to it and it was not worth the price they were paying for it. I think the Studebaker Company did keep it in a few months in one or two of their high price models, and I believe Hudson kept it in windshields. Studebaker also in windshields.

Q. How about the Pierce Arrow?

A. I think Pierce Arrow adopted it about the time the Lincoln did.

Q. Do you remember when that was?

A. That was following the use of it by the Cadillac Company. Our sale to the Cadillac Company was the first sale that was made of standard equipment to an automobile manufacturer who produced in quantities, and following the adoption of laminated glass by the Cadillac Company other manufacturers of high-priced cars also started to use it. That was the reason we quoted an attractive price to the Cadillac Company, because we felt it would force other manufacturers to adopt it.

Q. Well, the Ford Company had it as standard equipment prior to 1928 in the windshields?

A. Yes, Ford used the window glass shield.

Q. Laminated glass?

A. It was laminated glass.

Q. Standard equipment for the windshields?

A. For the windshields.

Q. The Lincoln Company also had it in 1928?

A. After the Cadillac.

Q. I say in the year 1928.

A. I couldn't answer that.

Q. How do you know it was after the Cadillac?

[fol. 487] A. Because I have already said, Mr. O'Shea, that no manufacturer, prior to the time the Cadillac Company adopted it, was using laminated glass as standard equipment except the Ford Motor Company, who put it in the windshields of their car, but the Cadillac Company and the LaSalle adopted it throughout in all body types, and following the introduction of it by the Cadillac Company other manufacturers of high-priced cars also began to use it.

Q. Now, this one-eighth-inch plate glass that your company manufactured prior to 1928. You state that was for mirrors?

A. Oh, miscellaneous.

Q. Some of it was for mirrors?

A. Yes.

Q. That would be small pieces of glass, would it not?

A. Well, larger than used in an automobile. Perhaps up to seven square feet or perhaps ten square feet. Generally nothing over ten square feet.

Q. But the bulk of it was small pieces of glass, was it not?

A. What do you mean by "small"? That is a relative term.

Q. Something, say, under three feet.

A. Oh, no.

Q. The bulk of it was larger than that?

A. Yes.

Q. Was this one-eighth-inch plate glass that you marketed prior to 1928 suitable for use in making laminated glass, do you know?

A. Why, I think so. We were selling it to those who were in the laminated glass business at that time.

Q. Who was that?

A. Saftee Glass Company, Philadelphia, used it, and I don't remember whether Indestructo started or not.

[fol. 488] Q. Indestructo was in business at that time.

A. Then they were using it.

Q. Did they buy from you?

A. Yes.

Q. Have you any records showing the sale of this one-eighth-inch plate glass to Saftee and Indestructo prior to 1928?

A. I think I could find a record.

Q. Will you be good enough to produce those records?

A. I will be glad to.

Q. Were you present at a conversation in 1925 at which Mr. Nelson Edwards and Captain Brown and Mr. Wherrett were present possibly, at which Mr. Edwards and Mr. Haskell requested your company to sell to them one-eighth-inch plate glass? Do you recall whether you were present?

A. I do recall the conference, Mr. O'Shea, but whether it was in 1925 I don't know.

Q. Some time prior to 1928, though?

A. Yes, that is quite right.

Q. And was the subject of that conference to endeavor to get Pittsburgh Plate Glass Company to sell Triplex Company one-eighth-inch plate glass?

A. My recollection is that Mr. Edwards and Mr. Haskell wanted to determine what one-eighth-inch plate glass might be available and about what the cost would be in case they went ahead to organize a company to manufacture, and we discussed the quantities that might be available, as I recollect it, and the price that might be expected.

Q. Well, was not the main subject of that conference to determine whether they could purchase it from you—whether you had it available?

A. Whether we could make it if they wanted it.

Q. That was the purpose of that conversation?

A. That is my recollection of it.

[fol. 489] Q. And do you recall what you told them on that subject?

A. I do not. Captain Brown did most of the talking, and my recollection is that he assured them that they could have some reasonable amount. I don't remember the figures, although I read this testimony, and that he also gave them a price that might be expected, but I have no recollection of the details of it.

Q. Well, do I understand you to say now that you told them you would furnish them with one-eighth?

A. No, there was no agreement at all—no obligation—but merely a canvass of what might be expected in the way of the available supply and the price under certain hypothetical conditions that were set up by Mr. Haskell and Mr. Edwards.

Q. Well, were you in a position at that time to furnish the Triplex Company with one-eighth-inch plate glass suitable for use in the manufacture of laminated glass?

A. Do you mean did we have the capacity to supply it?

Q. Were you then making it?

A. Yes.

Q. And of a character that was suitable for use in laminated glass?

A. Yes.

Q. And just what was the purpose then? Was there an agreement entered into or a statement on your part that you could furnish the Triplex Plate Glass Company with the glass that they desired at this time?

A. I wonder if we are not getting the dates mixed, Mr. O'Shea. You began talking about 1925. Are you still talking about that date?

Q. I am talking now about the conversation which you seem to recall and which I understand took place some time in 1927—the latter part of 1927.

[fol. 490] A. You spoke about 1925 originally. My statements have been with respect to a meeting which was ar-

ranged with Messrs. Haskell and Edwards before they went into the laminated glass business.

Q. That was before 1925?

A. Before they went into it, yes.

Q. And at that time there was a discussion as to whether your company could furnish one-eighth-inch plate glass suitable for use in the laminated glass business to the Triplex Company?

A. As to whether we would have the capacity to supply it. That is correct.

Q. Did you tell them that you then were, at that time, making one-eighth-inch plate glass suitable for their purposes?

A. I don't know whether we told them that or not.

Q. Do you recall whether you told them that you were not making it?

A. I couldn't recall that, either. I assume not, because we were making one-eighth-inch plate right along.

Q. Suitable for use in laminated glass?

A. I think so, yes. Others were using it.

Q. Did you have any other conversations during the years 1926 and 1927 with Mr. Edwards or Mr. Haskell with respect to whether they could purchase this one-eighth-inch plate glass from your company?

A. I don't remember any specifically, Mr. O'Shea, although I saw Mr. Edwards and Mr. Haskell also at rather frequent intervals from the time they decided to go into the laminated business, and it is quite likely that we did discuss it, yes.

Q. Did you tell them at that time, during the years 1926 and 1927, whether you would be in a position to sell them one-eighth-inch plate glass suitable for use in manufacturing laminated glass?

A. I don't recall any specific conversation.

[fol. 491] Q. Well, subsequently you did sell one-eighth-inch plate glass to the Triplex Company, did you not?

A. Yes.

Q. Do you remember when you first began selling them?

A. No, but I would suppose in small quantities rather soon after they started in business, from my recollection. Our files would show if you want the records.

Q. Soon after the Triplex Company started in business?

A. I would think so, yes.

Q. That was in 1926?

A. Well, I guess that isn't right. If you want that, let me get the records for you, Mr. O'Shea. You are welcome to them.

Q. I would like to have you refresh your recollection as to when you first began to sell to the Triplex. If it will help you any, Mr. Cauffield tells me you began to sell him early in the first part of 1928—April or May.

A. Very well.

Q. You testified you advertised this one-eighth-inch plate glass in 1928?

A. We started in the fall of 1928.

Q. Do we understand by that you did not advertise it prior to 1928?

A. No, I think not.

Q. You mean you think you did not advertise it prior to 1928?

A. I think we did not.

Q. Was there any reason for not advertising it prior to 1928?

A. Yes.

Q. Why was that?

A. The plant was busy making three-sixteenths-inch thickness.

Q. Are we to understand then that you had no special interest in the sale of this one-eighth-inch plate glass?

[fol. 492] A. Prior to that time?

Q. Prior to 1928?

A. Yes, no great interest in it prior to that time, because we were very busy making three-sixteenths and one-fourth-inch glass.

Q. What was your production prior to 1928, do you suppose, of three-sixteenths and one-fourth?

A. I wouldn't want to say.

Q. It was many times greater, I take it, than the one-eighth-inch plate glass?

A. Oh, yes, many times. Quite right.

Q. Did you, however, quote the one-eighth-inch plate glass in your price lists prior to 1928?

A. I think we have always quoted it.

Q. Have you any of those price lists available in your records, do you suppose?

A. Yes.

Q. Will you produce, say, one in 1926 and one in 1927?

A. I may not be able to get them for those exact years.

Q. Or something prior. One or two or three prior to 1928?

A. Yes.

Q. What do you say the Pennsylvania Railroad used the one-eighth-inch plate glass for?

A. For their passenger cars.

Q. You mean by that the windows in their passenger cars?

A. Yes.

Q. Do they use it today—the one-eighth-inch plate glass?

A. Yes, in all their passenger cars.

Q. Is that true, too, of the New York Central?

A. Not all. The New York Central have used one-eighth-inch plate in some of their cars, but the Pennsylvania have adopted it as standard equipment many, many years ago—say before the war.

[fol. 493] Q. And you supplied them, did you?

A. We supplied them.

Q. Are you able to say from your knowledge of the laminated glass as to whether this one-eighth-inch plate glass that was supplied to the Pennsylvania Railroad, let us say, was suitable for use in the manufacture of laminated glass?

A. I think it would have been.

Q. I take it that it is your opinion that any one-eighth-inch plate glass is suitable for use in the manufacture of laminated plate glass.

A. No, I didn't say that, Mr. O'Shea.

Q. Well, is there some one-eighth-inch plate glass that would not be suitable, do you think, for use in laminated glass?

A. Why, yes. Glass might be very badly finished; it might have defects in it that would make it very bad for laminated glass.

Q. Of course, when you use this glass in laminated glass it has to be very clear and has to have great care taken in the process of it, does it not?

A. No different than the glass we make for every other purpose for which one-eighth-inch plate glass is used. It is all made by identically the same process.

Q. No more care has to be taken?

A. No more care has to be taken. The plant operates continuously, Mr. O'Shea, and we don't have special runs.

Q. Do you know whether or not it is true that the great bulk of the one-eighth-inch plate glass used by the laminated glass manufacturers prior to 1928 was procured from abroad?

A. I rather think it was.

Q. That is, the great bulk of it came from abroad that was used by these laminated glass manufacturers?

A. I think it was.

[fol. 494] Q. Will you please tell us what other American companies prior to 1928 sold one-eighth-inch plate glass?

A. I think Edward Ford Company made it in small quantity.

Q. Is that the company that is now amalgamated with the Libby-Owens-Ford?

A. Yes.

Q. Any other companies that you know of?

A. I don't think any other companies made a business of producing one-eighth-inch plate.

Q. Prior to 1928?

A. Yes, prior to 1928, although some other manufacturers did sometimes make it by regrinding, I think, glass that came out with a poor finish. Every manufacturer had a certain number of tables which are received with a poor finish or scratched surfaces which impairs the marketability of the product. Instead of throwing that away, the glass would be relaid and reground and come back as one-eighth.

Q. Would that reground glass be suitable for use in laminated glass?

A. It might be or might not be, depending on the success of the operations.

Q. When you reground that way would the resultant product be even as to thickness?

A. It might be and might not be. Unevenness, of course, was one of the difficulties with the old style of plate glass manufacture.

Q. You mean the old style of one-eighth-inch plate glass?

A. No. I mean thickness was always a problem with the old style manufacturing machine.

Q. I thought you said unevenness.

A. Unevenness in thickness was the problem.

Q. And, of course, if it was uneven in thickness, it was not suitable?

[fol. 495] A. It would be difficult to laminate, depending upon the degree of unevenness.

Q. That degree would be very slight to make it unsuitable?

A. You understand no commercial plate glass is absolutely flat. It does not have scientific parallel surfaces, so flatness and unevenness is present to a certain degree. Our present glass is wedgy to a certain degree. These sets I have spoken of when returned to the factory for regrinding if the process was done evenly, the product was entirely satisfactory for laminated glass; if it was done unevenly, and wedgy, it was not satisfactory.

Q. It was quite important in laminated glass to have it as close to the ideal and level surface as it was possible to get it?

A. Quite right.

Q. I would like to have the information concerning Indestructo and Saftee.

A. The Saftee Glass Company and Indestructo did a very small business prior to 1928.

Redirect examination.

By Mr. Smith:

Q. Mr. Higgins, you said in answer to Mr. O'Shea that the Ford some time prior to 1928 used a window glass laminated windshield, as I understand you.

A. Yes, that was the product which they originally put into the Ford car. It was laminated glass made of two sheets of window glass instead of two sheets of plate glass.

Q. Is that a cheaper product than plate glass lamination?

A. Very much cheaper.

Q. And how does it compare in quality?

A. Not nearly as good, of course.

[fol. 496] Q. But at that time the only standard Ford equipment where laminated glass was used was these windshields which were laminated window glass?

A. That is correct.

Q. Just a question about these passenger cars. When you spoke of the Pennsylvania Railroad passenger cars did you mean by that the Pullman cars or ordinary day coaches?

A. The ordinary day coaches.

Q. The Pullman cars are made by a different company?
A. Yes, different company.
Q. Do they use a different glass?
A. Three-sixteenths.
Q. The passenger cars—that is, the day coaches—are made by the Pennsylvania Railroad themselves?
A. Generally. If they have a large quantity to build, they sometimes will sublet a portion and build a portion in their own shops. If they sublet a portion, we sell it to them—like the American Car & Foundry, or somebody of that sort.
Q. The Pennsylvania Railroad have a shop at Altoona?
A. Yes.
Q. Your testimony was they used the laminated glass in the ordinary day coaches, as distinguished from the Pullmans?
A. Yes.

J. H. SHERTS resumes the stand.

Direct examination (continued).

By Mr. Smith:

Q. Mr. Sherts, you testified earlier in your examination some days ago that you were employed for some years by the du Pont Viscoloid Corporation, if I remember the name of it. Was that it?
[fol. 497] A. That is correct.
Q. And were you familiar with these sheets of pyralin, such as were used in 1928 and 1929 and during the balance of the accounting period, in the manufacture of this laminated plate glass?
A. I was.
Q. Will you please tell the Master whether or not on January 1, 1928, and prior thereto, and also subsequent thereto down to May 31, 1930, these sheets of pyralin such as were used in the manufacture of this laminated glass were a marketable product?
A. There is nothing really different about the celluloid or pyralin used in safety glass and the standard product which had been used ever since I went with the du Pont Viscoloid Company in 1919. The product was made in very great quantities and sold for automobile curtains be-

fore the closed cars came in, for combs, brushes, mirrors, toilet articles, hair pins, goggle frames and a number of other places. The only difference between one type of product and the other was the color that was put in it, but the clear transparent that was used for safety glass was the same as the clear transparent used in automobile curtains in tremendous quantities ever since automobile curtains have been used; so it was nothing new.

Q. And used not only for automobile curtains but for these other uses?

A. Yes.

Q. Please answer were or were not these pyralin sheets, such as were supplied to the Duplate Corporation, a marketable product? I mean a thing sold on the market in that form during the period you have mentioned.

A. They were.

[fol. 498] Cross-examination (continued).

By Mr. O'Shea:

Q. Mr. Sherts, in the pyralin used in this laminated glass business, wasn't that processed, at least, more carefully than the pyralin which you made into curtains for automobiles and combs?

A. I wouldn't say it was processed more carefully in general. In this product it was necessary, of course, to be careful in one respect and that was to keep dirt out, which wouldn't be objectionable perhaps in hair combs.

Q. Well, the wavy condition that you spoke of in your testimony had to be watched too, or the condition that produced waves in pyralin?

A. The thing that could produce waves in pyralin was the seasoning, and they are still seasoning it the same way as they did originally, and there has been no change in that respect.

Q. Well, didn't it have to be watched more carefully through the process so as to prevent, as far as possible, those wave lines?

A. Sheeter lines?

Q. No, the wavy condition first.

A. I would say no.

Q. How about the sheeter lines that you discovered?

A. It didn't have to be watched nearly as carefully for

sheeter lines as the pyralin used to cover wooden heels for ladies, which is a very sizeable market. Nothing new was done on those lines. We, of course, were as careful as we could be so as not to have rejects or cause anybody any trouble in using it.

Q. Well, in doing that, however, as I understand it, there was no necessity of taking any special care in the processing of the pyralin sheets?

[fol. 499] A. We endeavored to keep dirt out and we tried to improve our factory from that standpoint. Aside from that I think of no other changes.

Q. Then, you spoke of a condition in the pyralin that resulted in a haze when put into laminated glass. In processing your pyralin was it not necessary to watch carefully to prevent that condition?

A. Yes, they watched the raw material and rejected the material that came through hazy, whereas for automobile trade they did not have to reject it, but that simply meant a reduction in their yields.

Q. When you spoke of automobile trade you meant for curtains?

A. I meant for sheet curtains.

Mr. Smith: Counsel for defendants renew the objections to the allowance of the two additional objections, Nos. 18 and 19, as I recall, to our account offered by Mr. O'Shea for the reasons heretofore stated in the record by Mr. Christy and by myself, and that includes of course Mr. O'Shea's request for an account of costs of making one-eighth inch plate glass by the Plate Glass Company as well as the cost of these pyralin sheets.

The Master: I will withhold decision relative to those two objections until we get the briefs, or what assistance you will give me in helping me to determine relative to the additional statement asked for by counsel for the plaintiff.

Mr. Smith: It is mutually agreed between counsel for the parties that pending the decision of the Master on the objections covering Mr. O'Shea's additional objections, Nos. 18 and 19, we will continue and endeavor to complete the examination of Mr. Sherts, upon its being understood that by so doing the defendants do not waive any rights, and that among the rights they do not waive is the right, as they [fol. 500] maintain, to decline to introduce further testimony until it is determined whether or not Mr. O'Shea's

additional objections are to be allowed and the account of costs therein requested ordered.

(Recess taken until 1:30 o'clock P. M.)

Afternoon Session.

J. H. SHERTS, recalled on behalf of the defendants, testified as follows:

Direct examination.

By Mr. Smith:

Q. Mr. Sherts, among other things, I forgot to ask you the other day about these assembly department losses. What was the assembly department, briefly?

A. The assembly department was the department where we cleaned the glass, sprayed it with cement, put the pyralin between the plates and adhered them together with adhesive paper prior to putting them in the rubber bags.

Q. Well, what losses, if any, did you experience in your operations there?

A. We had considerable amount of trouble, of course, with the equipment, as the equipment had to be developed at the same time that we were producing. Practically the entire period that we were manufacturing in the original safety glass factory our equipment was under a stage of revamping. At first a conveyor was built, and provided with one brush for removing the pumice, and a small drier for drying the pumice. As soon as we got the production orders of May—Cadillac and LaSalle orders—it was neces- [fol. 501] sary to change the speed of the conveyor and lengthen it, put more brushes on it—in other words, the drying hood—and with the change in speed we also had to change the amount of cement that was being thrown, and the first couple of months we operated by having a man simply spray the plates as they would pass by him. This was discovered later, particularly on the night shifts when supervision was poor, to be a very inadequate method, as areas of plates were frequently missed, due to the fatigue or personal element entering into it, so that we had to make a mechanical arm that would guide the gun back and forth across the conveyor. This was operated at first by hand,

and a timing device was put on the conveyor which clicked every time the conveyor moved two inches. That was to guide the operator in making one pass back and forth across the conveyor. This was used for several months until it was found not to be absolutely foolproof, and a mechanical device had to be developed and installed. These changes I am referring to were all being made during this rush period of operation, and it is obvious with mechanical men coming into a department where we were trying to keep all the dirt out, that it was physically impossible to prevent a great amount of dirt getting into our product at this point. In the little room where the spraying was done, when we were operating on a small basis, it was not found necessary to filter the air, but when we began to produce thousands of plates a day, operate day and night, more people were required in the rooms, more mechanical motion and more product handled, contamination reached a point where it was necessary to install in the room motors and fans and ducts for conveying the air, and filters so as to remove as much of the floating particles as possible. We, at this time, had to increase the amount of cement used, and [fol. 502] as this had to be made in a perfectly clean room, it became necessary for us to make it in this cement spraying room, as it was the only clean room available. It was later found that the fact that there were men making this cement in the room with steam and heat brought about a condition which caused dirt and heat, so that with summer coming on in June or July a system of ventilating the room had to be installed. This meant overhead pipes, fans, and so forth. The specialty manufacturing, such as bullet-proof and large plates, which could not be handled with our small equipment—I mean our conveyor which was relatively small for these large plates and on which bullet-proof or one-inch glass could not be handled—had to be assembled and sprayed in this one small spraying room, which was also our laying-up room. This pictures the condition of constant moving in and out of the room and a relatively large number of employees naturally carried into the room dirt and particles which resulted in a great many of our rejects. Other experimental ideas were tried out in the room, such as a method for cleaning the pyralin. It had proved satisfactory in the laboratory in a small experimental way but would not work in a practical way, so that it was neces-

sary to remove it. These spray guns at first passed back and forth over the belts which constituted the conveyor. These belts, as I recall, were approximately eight or six inches to a foot wide. For several months nothing happened, but when we got into the large production the cement began to coat the belts and the air from the spray gun tended to force the particles from the surface of the belt up on our glass. The gelatin had a tendency of peeling the surface of the belt, which was rubber, and in this way, before we could correct it, a great many particles of rubber, which were so small that they could not be detected by our [fol. 503] inspectors—our examiners—before it was put into rubber bags, pressed out to objectionable size defects in the high pressure of pressing. This condition necessitated a major change in our conveyor. The conveyor had to be cut and divided into two conveyors, so that the part that passed under the spray guns was a separate unit. We then made that unit out of thin belts about a quarter of an inch in diameter and provided space between them so that the air from the guns would blow down through the belts and carry the dirt toward the floor instead of rebounding back, as in the case of blowing against the flat, broad belts previously used. This worked all right at first, but after a few weeks or months we discovered that these belts got so coated with wet cement that it put cement on the back of the plates. When they were laid up in the rubber bags, as previously described, in pairs of two or double-decked, we ran into a condition of the two glass plates sticking together.

By Mr. Christy:

Q. You mean two sandwiches?

A. Two sandwiches sticking together. In separating them the cement caused the surface of the glass of one or the other of the sandwiches to pull off, so that this part of the conveyor had to be revamped. We then designed and installed a metal slat conveyor for passing under the spray guns and this was carried through water, a pan of water, before returning to the point where it picked up glass and conveyed it under the spray guns. This was a major change and meant considerable amount of carpentering and mechanical work, and at a later date it was considered advisable to put partitions in this room so that the

spray guns would be in one division, the cement mixing in another division, and the men who laid the glass and pyra-
[fol. 504] lin together in another division. In order to prevent dirt from falling down on the glass after it had been sprayed, we built a metal canopy over the conveyor, which was a little higher than a man's head, but would prevent dirt from the ceiling from landing on the glass. Inspection lights were installed and changed a number of times to provide the best possible means for examining the glass, so as to prevent glass with dirt included between the two pieces of glass and the celluloid from being pressed. I have just mentioned the bigger developments in that department, but I think it should be clear from this that the condition in that assembling department was a series of changes, one after the other, just as quickly as we could determine what was causing a certain kind of defect and we could agree on a step which would tend to eliminate it, and I could go on mentioning, I think, dozens of minor changes should you care to have them recorded.

Mr. Smith: You need not do that, I guess.

A. (Continuing.) In that department, like all other departments, Mr. Lytle and I and several other men gave a large part of our time trying to help the production department by making this suggestion or that suggestion or installing what we thought would be an improved condition or piece of equipment to reduce their losses and improve their yields.

By Mr. Smith:

Q. Was there what you might say constant revamping of equipment in these operations?

A. There was a constant revamping.

Q. Did that revamping of equipment, while it was being made, did that interfere with your operations and the quality of your product?

[fol. 505] A. That naturally interfered decidedly and resulted in poorer yields and large numbers of rejects.

Q. Now, in this specialty glass and bullet-proof glass, you spoke, I think, of the difficulty with the conveyor in respect to this bullet-proof glass, which I understand is an inch thick. Is that right as to thickness?

A. Yes, at one time it was an inch thick and later a standard of 1⅛ inch was adopted.

Q. Were there any other difficulties with this bullet-proof or other specialty glass in addition to what you mentioned?

A. We had glass plates which were so large that the celluloid sheet wouldn't reach the whole way across the plate. It was therefore necessary to cut two pieces of celluloid with a straight edge and butt-joint them so as to have a celluloid sheet large enough to cover the entire area. That butt-jointing naturally required a lot of extra handling and care in putting it together, because if there was a gap between the two pieces of celluloid, it constituted a reject; if it overlapped, it resulted in a break under the pressure.

Q. Break of what?

A. Break of the outside cover of glass. Bullet-proof is made of three pieces of glass and two pieces of celluloid, and naturally with a butt-joint and sometimes two butt-joints in each piece of celluloid the complications are very great; so much so that the production people were unable to handle it and we had to train special men and have them follow that type of work from beginning to end.

Q. How do you spell butt-joint—b-u-t-t?

A. Yes, b-u-t-t-joint.

Q. What do you mean by butt-joint?

A. We mean the two edges of celluloid are cut straight and butted together end to end.

[fol. 506] Q. And then placed inside the sandwich?

A. Yes, sir; so that they come as near forming a solid sheet as possible. There is a hair-line noticeable where the two edges join.

Q. In your opinion did the various operating difficulties that you have referred to furnish sufficient reason for the large losses in operation and the rejects from your own plant and also rejects by customers of laminated glass that the company is seeking to establish in this case?

A. In my opinion they did. I was familiar with every type of reject, and we took the responsibility for them at the factory and tried as hard as we could and as fast as we could to correct the condition.

Q. Mr. Sherts, if a piece of glass is traveling along your conveyor and gelatin falls on the top of the glass, when you remove the gelatin does that have any effect on the glass itself?

Mr. Christy: That is, suppose gelatin gets on the outside surface of the glass.

A. It wouldn't have any effect on it unless it adhered it in the pressing to another plate of glass which could not be removed readily, in which case it would pull and chip the surface of the glass off.

Q. In what case would it do that?

A. In the case of laminating if two sandwiches were put together, one on top of the other, and you had gelatin on the back of one, it would cause those two sandwiches to adhere together so that in pulling them apart the adhesion to the glass would be so great it would pull the surface of the glass off.

Q. Do you happen to know whether or not that method is used in making frosted glass?

A. Yes, that is the standard method of making frosted glass, of putting gelatin on and letting it dry so that [fol. 507] when gelatin shrinks it pulls the surface of the glass off.

Q. Now, you spoke, as I recall it, of taking some of this laminated glass and salvaging it by separating the sheets of glass, I believe, using them over again. Is that the idea?

A. That was the idea, to try to at least get some value out of the glass. If there was no value in the product as it was laminated, we endeavored to separate it and then use the glass over again.

Q. What was your experience in that operation?

A. We started in the fall of 1928 to separate glass in large tanks of boiling water and this required approximately forty-eight hours of boiling, and after separating quite a large quantity of it, working for several months, we found that the glass surface was destroyed, due to the water and the alkaline effect of the water and the handling required in getting it into the tanks and getting it out and cleaning it, so that we were unable to use very much of it, such a small quantity that our efficiency men showed to the satisfaction of everyone that it was a decidedly uneconomical operation.

Q. Lost money on it?

A. Yes, sir, and we discontinued it at once.

Q. Any glass that you did salvage at any time, was that put into the company's plant and reflected in its account so as to show the effect?

A. Yes, that was all charged back.

Q. Did any of your automobile customers maintain inspectors in your plant to inspect your product before it was sent out to them?

A. No; except when we started producing for the Cadillac and LaSalle, due to the fact it was a new business with us and in order to get to a clear understanding as quickly as possible and so that we would not make a large percentage of rejects which were obviously rejects to them, they at our [fol. 508] request sent one or two of their inspectors to our plant for a few weeks for the sole purpose of educating our inspectors and standards men on what would pass out there and what wouldn't, and what constituted a defect, to arrive at a definite understanding.

Q. What period was it when those inspectors from the Cadillac were there?

A. I would say that was in May or June.

Q. 1928?

A. 1928.

Q. And after June, 1928, were there any inspectors from customers in your plant?

A. Not that I recall.

Q. Now, what was your experience with respect to glass rejected by your customers after you had shipped it on orders?

A. Well, we experienced the fact that certain customers rejected as high as 35 per cent. of the glass we shipped them, and we thought we were doing pretty well if the rejects didn't run over 15 per cent. before they installed it in cars.

Q. Is that high—15 per cent.?

A. It is terribly high.

Q. Was the glass actually sent back to your plant?

A. It was all sent back to our plant, yes, sir.

Q. And what happened with respect to your accumulating a stock of rejects sent back by your customers?

A. Well, it was sent back and we didn't know what to do with it. We were so busy handling the problems in our factory, trying to correct the conditions, that it was simply set aside in several places. We stacked it under the leers in the Pittsburgh Plate Glass factory and we began to store it in the addition to our old factory as soon as it was completed.

Q. That was the first addition you made to the old factory, was it?

[fol. 509] A. The only addition we made to the old factory.

Q. It was not your new building?

A. No, the annex to the old factory.

Q. How much of that addition to the old factory did you finally occupy with these rejected plates?

A. We nearly occupied the whole building except for an aisle-way or two leading through the glass, and in some cases it was stored two stacks high.

Q. Could you operate under those conditions?

A. No, we never did operate very much in that new end. It got filled with rejects before we got started in it. We used a little corner of the building; I should say a part thirty feet square.

Q. What did you do to relieve yourself of this accumulation of rejects that your customers sent back?

A. We started a relamination of it, had a number of inspectors go through the entire lot of glass and classify it into two stacks: one, plates that we though could be cut down and sold as a smaller size, and the other, plates that were to go to the dump as so much scrap.

Q. You mean the dumps of the City of Pittsburgh?

A. Of the town of Tarentum.

Q. Was there any large quantity of these glass rejects that were actually thrown on the dump and thrown away?

A. Yes, there were very large quantities, as we had big trucks work continuously for several weeks after we got them aside, and then practically every day we would send a truckload or more up to the dumps, so that there was dozens of truckloads of this laminated glass cracked and taken up and dumped.

Q. Then, there was a certain amount of it you set aside for cutting to smaller sizes?

A. Yes, sir.

Q. In a word, what happened when you cut those down to smaller sizes?

[fol. 510] A. We experienced separation out in the trade and a second return of them.

Q. That is, if you cut the laminated glass to a smaller size, it continued separating?

A. It would start separating again.

Q. And be rejected again?

A. A large percentage of it would separate at once and be rejected again.

Q. So did you find it was the proper procedure in the interest of economy to use these rejected plates?

A. This required some considerable time to determine how much trouble we were getting from this cut-down salvage. Finally, it was determined that it was decidedly bad business for our company and we were losing money and getting a lot of criticism, and it was decided to discontinue it and separate the remainder that we had laid aside.

Q. Was it wise judgment on your part to come to that decision?

A. Absolutely.

Q. And you have described your experience in separating the remainder?

A. No, I haven't described our experience in separating the remainder. The remainder was separated by a new process which was developed in that interim of two years namely, separating under pressure in stead of in an open tank. That way we could get a temperature of about 250 degrees in the water, which caused a plate to separate in six hours instead of forty-eight hours, and this way we were able to overcome a lot of the damage that had been done by that slow process of separating in open tanks, and this time we did succeed in getting a percentage of good glass, sufficient to justify the cost of separating.

Q. And did that go into your plant accounts?

A. That shows up in the plant accounts too.

. . . . . .

[fol. 511] Q. Mr. Sherts, when you were on the stand before, you testified to having been in the Saftee Glass Company's plant. Where was that?

A. That was at Wissinoming, Pennsylvania.

Q. And you spoke about them having one or more autoclaves in that plant?

A. Yes.

Q. Were you allowed to inspect the operation of the autoclave?

A. No. Everything was considered—their operations were considered of more or less secretive nature, and I was

called in on pyralin, as pyralin affected their product—for instance, haze or adhesions—and the result is I had never been down around the autoclaves. I could see them while working at one end of the factory, see the tanks down there, and about how big they were, but that was about all. I had no information particularly about the way they were operated.

Q. Would you have had to examine the inside of the autoclave to see how they operated?

A. Yes, we would have had to examine the inside and the way the heat was introduced and how it was heated and how the pressure was applied.

Q. Were you allowed to do any of that?

A. No, sir.

Q. Did you get any information from your visit to that plant which would teach you how to operate the autoclaves in your Duplate plant?

A. No, I should say not. We only learned the general principle, which was known to everyone in the laboratory, of heat and pressure by autoclave, but nothing of the details which constitute the technique and the peculiarities of this industry.

Q. Was it necessary to learn those details in order to successfully operate autoclaves practically and commercially?

A. Absolutely, and it is a very difficult thing.

[fol. 512] Q. When you spoke of customers' rejects what do you mean by that? Do you mean your company shipped, let us say, a certain number of plates of laminated glass in filling an order and then the customer rejected part of that shipment?

A. That is correct.

Q. And you mean to make that description apply to all these customers' rejects, do you?

A. Yes, sir.

Q. Now, the part that the customer rejected, did they pay for that or not?

A. He would set them aside when he received them. He would have a receiving inspection and set the plates aside that didn't meet his approval. He would send for one of our men to come and examine them. We would send the man and he would examine them and admit that they were not up to the customer's standard and legitimately our

failure to deliver what he purchased. He would return and authorize the city office to issue a credit to the customer and the customer to return them to our factory.

Q. So it was a case of filling an order and having part of it rejected and thrown back on the plant?

A. That is correct, and credit issued for that.

Q. When you said your inspector would go there and approve the rejects—that is, he would either approve or disapprove, I suppose?

A. Yes, sir, he would examine every plate set aside and occasionally he would find one that they agreed was on a margin, and they would accept it.

Q. In your testimony the other day you testified to an Exhibit "F," as I recall it, which showed rejects by plates and not by feet. Under whose direction was that Exhibit "F" prepared?

A. Originally I started that system of recording rejects in order to classify our rejects so that we could attack intelligently the worst condition, or the condition that caused the greatest percentage of rejects.

[fol. 513] Q. These we are speaking of now, Exhibit "F," were plant rejections?

A. Yes, plant rejections.

Q. Rejects by your own organization?

A. That is correct.

Q. You did that for the purpose of discovering what the trouble was with your operations?

A. Yes, sir.

Q. Did you do that for the purpose of making an accounting record for the purpose of getting it in the shape of feet and dollars, or just to show the troubles in operating?

A. No, that was purely for the purpose of knowing just why so many plates were being thrown out, so we could correct the cause of the trouble.

Q. And for your purposes in endeavoring to correct these operating defects, was it just as good to have an exhibit prepared in plates as in feet?

A. Yes.

Q. Do you remember in connection with your customer rejects whether you went out on the road endeavoring to check up and remedy that situation?

A. Yes, sir, I was out on the road several days a week and practically every week soon after we began to ship

glass to our big accounts, studying what was wrong and bringing the information back to the factory so we could correct it and overcome their complaints.

* * * * * * *

Q. In operating your plant out there was it practical to lay up a stock of your manufacturing product of laminated glass, or did you have to keep it moving through the factory?

A. It was impractical to lay up a stock as we could only manufacture on releases from a customer and the product [fol. 514] cannot be cut down economically from a larger block size as compared to manufacturing it originally in the finished size.

Q. That is to say, you mean it was not economical to make a sheet of glass like this book and store it away and then later cut a windshield out of it?

A. No, not for regular production. It would be to make a replacement occasionally.

Q. It wouldn't be proper practice in regular production?

A. Oh, no.

Q. In other words, when you are making laminated glass for windshields you make it on actual orders for windshields?

A. Yes, sir.

Q. And you cut it to proper windshield size and delivered it in that shape?

A. That is correct.

Q. And did that apply to your other products you were turning out?

A. It does. We made for the warehouses some block sizes so they could make replacements, but we never made any quantity of them before we received orders to ship them.

Q. I suppose that was a very trifling amount?

A. Very trifling amount; as low as we could possibly keep them.

Q. Then, is this a fact, that your production of laminated glass represented substantially your sales of glass?

A. Our production represented sales?

Q. Substantially.

A. Our production plus the rejects—well, we sold everything we made except what was rejected.

Q. And these rejects, I think you have already said, were made in the process of filling orders? That is, you at-

[fol. 515] tempted to fill an order and you ran into some rejects?

A. That is correct.

Q. Now, you spoke of some difficulties with bowed glass. What was that briefly?

A. That was a very serious difficulty and caused a great number of rejects, due to the laminated plate being bent so it would not fit in a frame—would not slide up and down the channels. for an automobile account.

Q. Well, did you have to correct this bent or bowed condition?

A. We attempted to by repressing the plates, and we tried to correct the conditions in the factory which caused the bowing. We were unable to ever correct that as long as we used the rubber bag method of pressing. In repressing these bowed plates the breakage and scratches and burning, and failure to straighten, was a very high percentage.

Q. I think you testified the other day at one time you had to buy a large stock of these pyralin sheets from the du Pont Viscoloid Corporation, and I think you said it took you substantially a year to use it up. What is the effect of pyralin when it is stored for a year? Does it have any effect on the quality of it?

A. No, we were not affected by deterioration due to the storing, but in their rush to manufacture these large orders they ran into a lot of defects in the pyralin which they had never heard of before and we had never encountered, and then during that following year that defective pyralin got into our system and before we discovered the defect it was a source of a great deal of trouble and rejects.

By Mr. Christy:

Q. When you went to the Pittsburgh Safety Glass Company and through the first two years of operation until you [fol. 516] became superintendent, what official title did you have, or by what title were you known?

A. I had no title at all until August, 1928, when I was given the title of technical director, and in June of the next year I was made technical director and assistant general manager.

Q. Did that technical director work include what you may

have termed or some of the witnesses may have termed research?

A. Yes.

* * * * * * *

Q. Mr. Sherts, on your direct testimony do I recall correctly your stating that you were not allowed to examine the Saftee process in detail?

A. That is correct.

Q. You testified in the District Court in this case, did you not?

A. Yes, sir.

Q. I read from the transcript of record of the District Court testimony as follows: page 117—"I first saw the operation of the Saftee Glass Company in 1921, but not particularly in detail until the early part of 1922," and again at page 120 I quote your testimony in the District Court as follows: "It was after my visit to and examination in detail of the process of the Saftee Glass Company of or near Philadelphia that we caused this defendant enterprise to be formed and an operation similar to that which I had observed in the Saftee Glass Company to be put into commercial operation by the defendant." Do you recall that testimony?

A. Yes, sir.

Q. Was the testimony true at the time it was given?

A. It was, but at that time we were talking about the cement——

[fol. 517] Mr. O'Shea: If your Honor please——

Mr. Smith: Let him explain.

A. (Continued.) It is not true then.

Q. Do you want to say it is not true now?

A. It is not true as applied to the autoclaves.

Q. Am I to understand now that you wish to be understood that you testified untruthfully in the District Court?

A. No. May I explain?

Mr. Smith: Certainly you may explain. Go ahead.

A. (Continued.) In the testimony today I said I didn't know the details of the autoclave operation, that I could see it in the plant in a general way. I saw the autoclaves, about how big they were, and I knew from laboratory ex-

perience and general knowledge how an autoclave operates with a heat in it, and in the case you refer to I was familiar with the spraying of the operation in detail and the handling of the pyralin. In that part of the plant I was admitted and worked closely and was familiar with the operation, so there was a distinction—very decidedly. In the testimony offered in the original hearing we were interested in the cement condition and the condition of our application of cement, and the pyralin end of it. Now, there are two decidedly different phases: the one as pertaining to the cement and celluloid, which I still admit, as I stated at that time, I was familiar with in detail; the rest of it only in a very general way and not in detail. I knew there were presses there. I knew how they used pressure, but I didn't know the circulation or the mechanics of it when I went into the factory any more than I knew autoclaves were operated in a general way in any kind of factory they were used in. I don't see that there is any difference or change of mind on the subject at all.

[fol. 518] Q. I quote from your testimony in the District Court, starting at page 117 as follows: "The operation of the Saftee Glass Company in 1922 consisted of cutting the glass plates to size, passing them through a small washing machine, which was connected with a conveyor. The plates came through this washing machine, were dried over a heater, passed by an opening in a hood, where a girl sprayed it with an atomizing gun similar in principle to the one we use—sprayed it with the gelatin solution, 2½ per cent. solution, and the glass continued on the conveyor through another covered chamber, which was heated with steam coils. At the end of this time, if the glass was not sufficiently dry, it was put in a small cupboard alongside the conveyor, where it was left until it was dry to sight. After this it was wiped off with a chamois, pyralin was interposed between two gelatin-coated glasses. This sandwich was held together by small paper stickers approximately three-quarters of an inch broad, and two inches long. This sandwich was then laid on a cloth, which was folded back over the top of it to prevent scraping, and the entire package shoved into a rubber bag approximately twenty by fifteen inches in dimensions. The end of the rubber bag was clamped, and a vacuum hose attached to a small nipple in the bag, and this afforded the means of withdrawing all the air in the bag. At this operation the vacuum hose was

disconnected, and a small plug inserted in the nipples to prevent air and moisture from re-entering. Approximately five of these bags were then placed in a small cast-iron pot. They were staggered, so that water forced in at the bottom and let out at the top circulated evenly over and under the bag. This afforded even temperature. This pot was then closed and clamped tightly, filled with water, and heated by running the water through a heat exchanger to a temperature approximately 250 degrees Fahrenheit. At [fol. 519] this point pressure was exerted by means of a small hydraulic pump, to the extent of approximately 150 pounds per square inch. The temperature and pressure was maintained for approximately fifteen minutes, during which time the heat was transferred through the bag to the plastic, the pyralin sheet." Do you recall that you so testified in the District Court?

A. Yes, sir.

Q. Was that testimony in the District Court correct at the time you gave it?

A. It was.

Q. And it is correct now?

A. It is. I do not think that it interferes with the statement that I was not particularly familiar with the details of the autoclave operation.

Q. Does not that testimony in your opinion indicate that you were then testifying that you saw it in the Saftee Glass Company's operation?

A. I saw this in a general way. I never saw a pump. I knew that a pump was used. I had a little autoclave of my own before I came out here and I had learned the principles, but I never saw the operation of the autoclave at Saftee.

Q. Didn't you testify also as follows: "It was after my visit to and examination in detail of the process of the Saftee Glass Company, of or near Philadelphia"——

A. That word "process" in the way it was used at that time applied to——

Mr. O'Shea: I object to that, your Honor.

The Master: He may explain.

A. —to the gelatin and the water in the gelatin and the way they handled the gelatin and the pyralin.

Q. That testimony refers in your opinion now only to the gelatin?

[fol. 520] A. So far as the detail was concerned. The rest of it was general.

(Adjournment was taken until Thursday, February 11, 1932, at 10 o'clock A. M.)

Thursday, February 11, 1932.

Met pursuant to adjournment.
Counsel present as before.

J. H. SHERTZ, resumes the stand.

Cross-examination (continued).

By Mr. O'Shea:

* * * * * * *

Q. You testified with respect, as you will recall, of the necessity of leaving a two-inch margin around the edge of the size of the glass that your customer had ordered. I am speaking now about this question of a margin around the bracket size ordered by the customer.

A. Yes, sir.

Q. Do you recall that testimony with respect to that subject?

A. I remember we stated the standard practice was to leave a one-inch margin for breaking the glass off.

Q. One inch on each side of the glass?

A. Yes, sir.

Q. Do you still in your present-day practice leave that same margin?

A. No, sir. We had a very thorough study made by our efficiency men, and we found that by making a two-way cut [fol. 521] at the Pittsburgh Plate Glass Company and assuring us a square corner, that our cutting can be done now with a margin at the top and one side instead of at the top and two sides.

Q. You only leave a one-inch margin now on one side? Is that what I understand?

A. Yes, sir; and in some cases, with our experienced and trained operators and the fact that we have made a thorough study of the efficiency, we are able to in some cases

use less than an inch, which we didn't think was possible at that time. Besides, with our present operation, the glass does not get the abuse in pressing and handling that it did in the old rubber bag method and we are not troubled with vents from spurs that we were originally.

Q. This cutting happens before the pressing operation, doesn't it?

A. Yes, sir.

Q. I don't quite understand why the abuse in the pressing operation should affect the cutting that happens before that.

A. Well, in cutting a piece of glass it is necessary to use a pair of plyers so that you break it off in small chips. That starts microscopic vents around the edge, and by the old process of uneven heating and cooling and the tendency to warp, which threw additional strains in the glass, those vents would progress inward more than in our present process where we are not troubled with the bowing and uneven heating, and we don't need to handle the glass as much as we did in putting it in bags and wrapping it up and evacuating it, so our problem isn't as great now as it was originally.

Q. Do you ever use less than an inch margin on some of this cutting?

A. Yes, we do.

Q. Do you ever use less than half an inch? I am speaking of the present operation.

[fol. 522] A. I believe we do for certain kinds of breaks. For instance, where a break starts with an inch at one edge and tapers gradually so you have an inch to catch hold of, or if it is a contour to give you more of a margin to cut, and it depends on how long the cut is. I would say in some cases, depending upon the nature of the cut, we use less than half an inch.

Q. You have stated a number of defects in the manufacture of this laminated glass. Is it not a fact that the following defects, namely, waves, strings, seeds, blisters, stones, ream, bloach, over-thickness nine thirty-seconds, and under-thickness seven thirty-seconds, as you have described them in your previous testimony, are defects which relate solely to the plate glass before it is fabricated into laminated glass?

A. Generally, but waves not necessarily, as pyralin has a property of causing waves at times. The glass has to

bend to accommodate itself to the thickness of the pyralin. Over-size or under-size is due to the thickness of glass, of course, but it is only the result of getting the combination of two extreme, heavy pieces on the lower side that will cause you the reject, so that as far as combining it is concerned, it is a function of the lamination department to cause a reject. Otherwise, as I recall the defects that you mentioned, they are defects in glass.

Q. Well, do I understand that the over-thickness and under-thickness, while it is a defect in the glass, for this special purpose it becomes an unsalable piece of laminated glass because of the necessary processing into laminated glass? Is that correct?

A. It becomes unsalable because of the customer's standard, but it was our direct work of putting two wrong pieces together that gave us a reject. If I used a thick piece on one side and a thin piece on the other side, then the product would pass. I just accidentally got the two thick ones to-
[fol. 523] gether or thin ones that caused the reject.

Q. The defect that you testified about and described and which you identified as glass scratches. That might or might not, as I understand it, be in the raw glass?

A. Yes, sir.

Q. When it was received, or it might happen some place in through the process?

A. Yes, sir.

Q. And was that true also of the defect which you spoke of as bulls eye?

A. Yes, sir.

Q. And is the same true of what you identified as sleek?

A. Yes, sir.

Q. And over-size. I take it over-size and under-size is an additional defect from over-thickness and under-thickness?

A. Yes. Over-size or under-size rejects were our responsibility in not getting them to the right shape on our finishing wheels. When we put the edge work on we ground off a little too much. They allowed us a plus or minus of one thirty-second.

Q. That always would happen during the process of manufacture of laminated glass and could not be affected by the size of the raw glass?

A. No, sir.

Q. Now, in your experience in this laminated glass business, when did you first learn of the necessity of cleanliness in the factory?

A. Well, we recognized that as being necessary before we even attempted the product.

Q. You knew that even before you came to the Duplate Corporation?

A. Absolutely.

[fol. 524] Q. And when did you first learn of the fact that pyralin was charged with static electricity which gave it the attribute of attracting particles of dust, lint and so forth?

A. We knew that before I came with the Duplate factory.

Q. And when did you first learn of the necessity of having pyralin that was to be used in the manufacture of laminated glass thoroughly clean?

A. We knew that before we started to manufacture.

Q. And when did you first learn that to allow water or steam to get between the glass plates gave a bad result in the manufacture of laminated glass?

A. Well, we didn't know that until we started to manufacture on a large scale—got into the big production—and then we didn't know the seriousness of it because it was not evident, when an amount of steam entered which was not sufficient to cause that white bloom, and there was contention on that point between all of us until August or September, 1928. Some of us thought a slight amount of steam on there, if it didn't cause a white bloom which would be an obvious defect, would cause no trouble, and we went ahead and manufactured in good faith that the product which didn't show the white bloom would stand up satisfactorily in the trade, and it was not until late in the summer or the fall, as I have just stated, that we began to discover the plates separating and made sufficient observation of samples and plates to prove to everyone's satisfaction that the slightest amount of steam had the effect of swelling the pyralin so that when the laminated plates stood around it would dry out and shrink and pull away from the glass.

Q. But you had not discovered that in your experience prior to your coming to the Duplate Corporation?

[fol. 525] A. No, sir.

Q. Are you able to tell if the raw glass has what is known in the trade, as I understand it, as the wedgy condition,

whether that glass, having that condition, is suitable for manufacturing laminated glass?

A. Well, it is or is not, depending on the degree of wedginess. It is much like over-size and under-size thickness. If the two extremes register on each other, you have a defect and reject; whereas, if they are opposites, where they tend to neutralize each other, you will be all right.

Q. You, as an experienced laminated glass man, would not want to use wedgy glass in the manufacture of laminated glass? Is that true?

A. Well, all glass is wedgy to a fine degree and within the ordinary conditions of wedginess it was all right, but a bad condition of wedgy glass would not produce a product which would be satisfactory to the trade.

Q. Can you state what degree of wedginess would affect the laminated glass? In other words, it is a very small degree, is it not, and when you speak of degree of wedginess which still could be used and the degree of wedginess which would make it unusable, the difference is a very small degree, due to the fact that you press them together and might get a break?

A. I believe that a wedgy condition of ten or fifteen one-thousandths from one end of a windshield to the other would be satisfactory and practical, but a wedgy condition of a thirty-second of an inch, which is about thirty one-thousandths to fifty or sixty one-thousandths, would be impractical.

Q. Anything over ten or fifteen one-thousandths would begin to be impractical at least?

A. That is my judgment now. We have some statistics on that that I could work up. We are limited to a plus or minus of a thirty-second in thickness as well as a plus or [fol. 526] minus of a thirty-second in dimension. If your wedgy condition would cause you to come outside those tolerances, it would constitute a reject.

Mr. Smith: Counsel for the defendants produce the following price quotations which have been submitted by Mr. Higgins, vice-president of the Pittsburgh Plate Glass Company, in accordance with his agreement made while testifying yesterday. They are quotations dated respectively June 21, 1924, July 25, 1925, July 22, 1926, and December 22, 1926.

With the consent of the Master and the counsel for the other side, we should like to turn these over to the Master for the purpose of having them photostated, and I suggest that we should have four photostats made and use one of the photostats in evidence, giving the other copies to the counsel for the plaintiff and defendants, because Mr. Higgins says these are his original file copies, and he would like to have them returned. If there is no objection, we would like to have them photostated.

Mr. O'Shea: There is no objection.

Mr. Smith: Those will be offered in evidence as Defendants' Exhibits "L-1", "L-2", "L-3" and "L-4".

(Hearing was adjourned until further notice.)

* * * * * * *

"NOTE.—There appears at this point in the Record before the Special Master a copy of the Interlocutory Opinion, set forth at length in Volume III at side folios 1052 to 1068 of the printed record."

Mr. Smith: Counsel for defendant respectfully except to that opinion.

[fol. 527] Mr. O'Shea: Counsel for plaintiff now requests the Master to make a specific order setting the time within which defendant shall file the account in accordance with the Master's opinion on this question.

The Master: Such an order will be granted.

Mr. Smith: Counsel for defendant except to the position taken by the learned counsel for the plaintiff, and we further respectfully except to the order of the Master and would ask the Master further when the order has been formulated to note us an exception thereto.

The Master: An exception will be noted.

(Hearing was adjourned until Tuesday, April 12, 1932, at 10 o'clock A. M.)

ORDER RE FILING OF ADDITIONAL ACCOUNT

On application of the plaintiff for order on the defendant, Pittsburgh Plate Glass Company, requiring it to file an additional account showing its costs of glass used by it

and its co-defendant Duplate Corporation, in the manufacture of non-shatterable glass, it is ordered that the defendant file such an account with the Master within four weeks from the date of the decision of the Court, in the event that the Court shall decide that such an account shall be filed.

G. Dixon Shrum.

(Exception noted to defendants.)

[fol. 528] Detroit, Mich., Wednesday, April 13, 1932.

Met pursuant to adjournment.

Present: G. Dixon Shrum, Esq., the Master; Ambrose L. O'Shea, Esq., of counsel for the plaintiff; William Watson Smith, Esq., L. E. Hickman, Esq., counsel for the defendants.

The parties met pursuant to notice at the offices of the Pittsburgh Plate Glass Company, 6045 Hamilton Avenue and thereupon adjourned to the plant of the Ford Motor Company.

A. M. WIBEL, a witness produced on behalf of the defendants, having been duly sworn, testified as follows:

Direct examination.

By Mr. Smith:

Q. Mr. Wibel, where do you live?
A. Oakland Drive, Birmingham, Michigan.
Q. Is that near Detroit?
A. About sixteen miles from Detroit.
Q. And I believe you are connected with the Ford Motor Company?
A. Yes, sir.
Q. In what capacity?
A. Director of purchases.
Q. How long have you been director of purchases?
A. Since the fall of 1927.
Q. Before that were you connected with the company?
A. Yes, sir.
[fol. 529] Q. In what capacity?
A. In charge of the engineering department.

Q. And you had been in charge of that department for some years?

A. Since 1919.

Q. As director of purchases I suppose you are in charge of purchases of the Ford Motor Company?

A. Yes, sir.

Q. Will you state whether or not you are the head of the purchasing department?

A. I am, sir.

Q. The company has recently brought out a new eight-cylinder car, has it not, Mr. Wibel?

A. Yes, sir; Model 18.

Q. What was the car that the company was selling prior to Model 18 called?

A. Model A.

Q. And when was the Model A car first introduced and sold?

A. The latter part of 1927.

Q. Now, will you state whether or not your company adopted any safety glass as standard equipment with the Model A Ford?

A. The windshield.

Q. You used the safety glass in the windshield?

A. Yes, sir.

Q. That was the only place that it was standard equipment?

A. That was the only place that it was standard equipment.

Q. Will you state whether or not safety glass has remained the standard equipment in Ford windshields right down to this time?

A. Since the inception of Model A we have used the windshield for standard equipment right up to the present time.

[fol. 530] Q. You mean you have used safety glass windshields?

A. Yes, sir.

Q. At any time during the years 1928, 1929 and 1930 has there been any real public demand for safety glass in automobiles?

A. There perhaps has been some public demand but not to the extent to influence us necessarily.

Q. Well, how did you come to introduce safety glass in your windshields? Was it on account of any public demand or was it because your company thought it should be done?

A. It was because our company thought it was a precaution of safety taken for safeguarding the public.

Q. And the use of safety glass by the company, has that been because the public demanded it?

A. No, sir.

Q. Why has it been used?

A. Because the Ford Motor Company thought it was a good thing to do.

Q. On the ground of protecting the customers of the Ford from injury? Is that the idea?

A. Yes, sir.

Q. Do you recollect the agreement dated October 17, 1927 with the [redacted] Safety Glass Company of North America?

A. Yes, sir.

Q. Now, without attempting to go into all the provisions of that agreement, do you recollect that the Ford Company agreed to purchase from the Triplex Company half of its Ford safety glass requirements for the period April 30, 1928 to April 30, 1932?

A. Yes, sir.

Q. This contract which was dated October 17, 1927 and which I assume was executed about that time, when did the [fol. 531] Ford Company go into production under that contract?

A. Early in 1928.

Q. And do you remember whether along about May, 1928, there was any change suggested by the Ford Company in the laminating process?

A. Yes, sir, there was along about that time.

Q. What was that change, Mr. Wibel?

Mr. O'Shea: If the Master please, may I interpose an objection on the ground that this testimony seems to me to be immaterial, irrelevant and incompetent in any of the issues in this case.

The Master: We will hear the witness's answer and determine later as to its relevancy.

A. It had to do with the changing of the method of preparing the celluloid sheets for use in the sandwich or laminated glass.

Q. Do you know what had been used for drying the pyralin under the Triplex process?

A. No, I do not.

Q. At any rate the change had to do with the pyralin sheets?

A. If you mean by drying the pyralin the oven arrangement for drying it afterwards, I am thoroughly acquainted with that. I know how that was done.

Q. Was there alcohol used in any part of this drying process?

A. It was a spraying on of alcohol in substitution for the immersion process. I don't remember the exact technical details of that but that was the way I recall it.

Q. Was there any change made with respect to the use of alcohol?

A. I think there was but I don't know the details of that.

[fol. 532] Q. Do you know whether, during the years 1928, 1929 and 1930, the Ford Company and the Triplex Company, or either of them, made any improvements or changes in the process of making laminated glass?

Mr. O'Shea: I have my objection and exception to all this line of testimony?

The Master: Yes.

A. Many changes were made.

Q. State whether or not there was any necessity for changes?

A. There was a great necessity for change.

Q. Why was that, Mr. Wibel?

A. Due to the troubles we were having in the laminated glass.

Q. Did you have many such troubles?

A. We had entirely too many for our own way of looking at it. The glass was being rejected and the losses were so great we bent every effort we could to make these improvements, both ourselves and the Triplex Company.

Q. In general, what were the troubles you experienced with the glass? What was wrong with it?

A. We had separations, discoloration, bubbles, crack strains.

Q. Any dirt between sheets?

A. Dirt between sheets also.

Q. Did these things interfere with the making of a proper windshield?

A. Yes, sir.

Q. Now, take the three calendar years 1928, 1929 and 1930. Will you tell the Master about how many windshields your company was obliged to produce or acquire from the Triplex Company to equip your cars?

Mr. O'Shea: Same objection.

[fol. 533] The Master: Answer the question.

A. I would say approximately five million.

Q. Five million windshields?

A. Yes, sir.

Q. To equip how many cars?

A. In the neighborhood of four million.

Q. In other words, it took, as I understand you, about five million windshields to equip about four million cars?

A. Yes, sir.

Q. Which means that about 20 per cent. of the windshields would be defective,-does it not?

A. Yes, sir.

Q. For the reasons you have described these various defects?

A. Chiefly those reasons.

Q. Now, I have asked you your experience during the three calendar years, and inasmuch as the accounting period only covers 1928, 1929 and the first five months of 1930, making twenty-nine months, I will ask you to tell the Master whether the production of cars and windshields was running at approximately the same rate during the twenty-nine months as during the thirty-six months.

A. I would say it would be very nearly so.

Q. What have you to say as to 20 per cent. rejections in windshields for defects? How much too high is that in your opinion as a manufacturer?

A. Offhand I would say it would be approximately ten times too high.

Q. These rejections for defects, did they occur with respect to windshields furnished by the Triplex Company to you?

A. Yes, sir.

Q. And did they also occur in windshields made by you?
[fol. 534] A. Yes, sir.

Q. Using the Triplex process?

A. Yes, sir.

Q. Will you state whether or not the purchasers of Ford cars returned any considerable number of windshields to your company on account of these defects?

A. Many of them were returned to the branches and then returned to us here.

Q. Did that put your company to a loss and expense?

A. Very great expense; had to be replaced.

Cross-examination.

By Mr. O'Shea:

Q. Mr. Wibel, in this million rejects—that included rejects of your own manufacture as well as the Triplex manufacture?

A. Yes, sir.

Q. Have you any figures in your mind as to what proportion of that million rejects were your own manufacture and what proportion were Triplex?

A. I would say offhand it was about fifty-fifty. We were both using the same process.

Q. You are depending entirely upon your recollection as to that, or did you ever check it up?

A. I have had it checked. As a matter of fact, we constantly check that kind of thing. Offhand I would say the rejections were about as bad one way as they were the other.

Q. Coming now to this defect of separation. You first under your contract with the Triplex requested them not to seal the windshield, did you not?

A. At one time we made some laminated glass without sealed edges. How long that experiment was carried on I can't recall. I have no record on that, but I know there were [fol. 535] some of them made without having sealed edges.

Q. Do you remember whether the unsealed windshields carried over the period of about from June, 1928, until the fall of 1929?

A. No, I do not.

Q. Well, in any event, later on the process was changed so as to seal the edges of the windshield, was it not?

A. Yes, sir.

Q. Did you get better results thereafter with respect to the separation defect?

A. I think the results obtained as a whole were better on sealing the edges.

Q. Well, now, originally, when you made the contract with Triplex, the Triplex product was a sealed product, was it not?

A. I don't recall that actually but I think so because we started with a sealed product in the beginning.

Q. And then your company requested the Triplex Company not to seal. Is that not the fact?

A. I couldn't tell you whether that was worked out mutually or whether it was a request on our part.

Q. Well, even if it was worked out mutually, you acquiesced in the change?

A. We acquiesced in the change, yes.

Q. But you don't recall whether you specifically requested it or not?

A. I don't recall whether it was something worked out between our engineers and the Triplex or whether it was a request on our part or a request on their part. I couldn't tell you that.

Q. Now, on this defect of discoloration. Did that run through the whole period of the contract, which I understand was from the early part of 1928 through the account-
[fol. 536] ing period, namely, June, 1930, or was the greatest trouble with that discoloration some particular period in between that?

A. I would say, as I recall it, our greatest trouble along that line was in the beginning.

Q. In the very beginning?

A. Yes, and perhaps faded out as we learned how to do the job better and as we perfected it.

Q. Well, now, you required the Triplex Company to use a German pyralin product, did you not? Do you recall whether you did ask them that?

A. I don't recall that. I think there was a process used and that was the name applied to it, but the technical end I am not so familiar with.

Q. You don't remember whether your company did require the Triplex Company to purchase a German pyralin?

A. I believe the greater part of the celluloid was purchased by the Ford Motor Company.

Q. And did you buy that——

A. We did buy a German celluloid; yes, sir.

Q. And that celluloid you purchased you delivered to the Triplex Company for use in their product which they manufactured for you?

A. Yes, sir.

Q. Was that German product a cheaper product than the American celluloid?

A. As to price you mean?

Q. Yes.

A. Yes, sir.

Q. Are we to understand from the fact it was a cheaper product as to price it was also a poorer quality?

A. I wouldn't say so. The price situation wouldn't always be the evidence of that.

Q. It is a fact, is it not, that one of the principal causes for discoloration lies in the pyralin?

[fol. 537] A. I think so; yes, sir.

Q. As a matter of fact, isn't that the only cause for discoloration of non-shatterable glass?

A. I don't know.

Q. You did, of course, stop using this German celluloid at a certain period in this accounting period from 1928 to June, 1930?

A. No, I don't think so. We still have German celluloid on hand.

Q. But are you using it in all your product?

A. I don't think so. Not in all the product, no.

Q. Well, in this period, 1928 to 1930, didn't you discontinue, at least to some extent, the use of the German celluloid?

A. We did to some extent because the States suppliers came more directly back into line and celluloid from the States was then purchased to quite a great extent.

Q. You mean the States suppliers lowered their price?

A. Very, very materially; yes, sir.

Q. Did they get it down as low as the German celluloid?

A. Finally I believe lower.

Q. Was that the only reason you discontinued the use of the German celluloid in some of your product?

A. That was one of the reasons and one of the other reasons was we wouldn't buy in Germany if we could do as good or better in the States.

Q. Is it not a fact that one of the reasons for the discontinuance of the German celluloid was your engineers or yourself felt that some of this discoloration was caused by the German celluloid?

A. I think so. I think we had doubts along that line. As a matter of fact, we checked that point up very carefully. Before we went that far with it we sent our engineers to Europe to check that also.

[fol. 538] Q. And your conclusion was that partly, at least some of the discoloration was caused by the celluloid? Is that not a fact?

A. That perhaps that would be a contributing factor in the situation.

Q. Did you find this to be the fact: that as you increased the use of the German celluloid you got greater rejects in your finished product?

A. I wouldn't say that. I couldn't make that statement. I would not say that was so.

Q. You mean you don't know that was so or not?

A. No; because I have felt the celluloid, no matter from what source it was procured, was a contributing factor in the discoloration.

Q. I say you are not prepared to say as to whether, as you extended the use of the German celluloid, you got a greater increase of rejects.

A. I am not prepared to say that; no, sir.

Q. Now, you say you had to obtain five million windshields to equip four million cars?

A. Approximately so.

Q. Leaving a million excess over the number of cars. Was that million all rejects or were some of those normal rejects for breakage in transit or at the distributors or because of poor handling, or something of that sort, or accident?

A. They were replacements for every possible thing that could happen to laminated glass.

Q. That included accidents to the windshields which may have been caused by workmen dropping the windshields or something of that sort?

A. It included everything that happened to laminated glass wherein we had to procure another laminated sheet to take care of something that went out of the picture before.

Q. So that the whole million were not what we usually speak of in the trade as rejects because of being defects?

[fol. 539] A. I wouldn't say so. Any one that was broken by accident would change that statement.

Q. I thought that was what you intended to testify to.

A. Yes, sir.

Q. You say you adopted only the windshield as standard equipment in Model A. Is it not a fact, Mr. Wibel, that you also adopted as standard equipment, on such cars as used them, the wings?

A. Wings for what?

Q. For the open cars I think they were used on.

A. I don't recall whether that was standard equipment or optional equipment. As far as the body glass was concerned, it was optional.

Q. You mean the body glass was optional equipment?

A. Yes, sir.

Q. And the windshield was standard equipment?

A. Yes, sir.

Q. And you don't recall whether you had as standard equipment the so-called wings which were used on open cars?

A. I don't recall whether that was standard equipment or optional; no, sir.

Q. Mr. Wibel, all your testimony this morning relates to what is known as sheet glass as distinguished from plate glass?

A. No, sir; not necessarily.

Q. Well, in this period, in the beginning of the contract, 1929 to 1930, did you or Triplex use any plate glass in the windshields?

A. No, sir.

Q. Well, then, all the pertinent testimony with respect to that period relates then solely to sheet glass?

A. I believe so. I think plate glass was used somewhere beginning about the middle of 1931.

[fol. 540] Q. From your experience are you able to state as to whether or not you have more difficulties with the sheet glass than you do with the plate glass in this product?

A. As a matter of opinion, I think you would have more trouble with the sheet glass.

Q. It is your opinion, as I understand it, Mr. Wibel, that an experienced manufacturer of this laminated glass ought not to have more than 2 per cent. rejects?

A. I would say approximately that he should not have more than that.

Q. Are you able to state, Mr. Wibel, as to whether the crack strains constituted the biggest proportion of the rejects?

A. I am not from a standpoint of actual checking, but from a matter of opinion I would say that they were not.

Q. They were not?

A. No. Not when you figure that particular point with reference to all the rest.

Q. Well, did they constitute the greater part with reference to any other single one?

A. I couldn't state that definitely either. I don't know.

Redirect examination.

By Mr. Smith:

Q. Mr. Wibel, you have been asked about the use of German pyralin sheets. Will you tell the Master whether or not in your opinion those were good and proper sheets to use?

A. We think they are good and proper sheets, yes, sir.

Q. And when you began to use pyralin sheets manufactured in the United States did you also have trouble with [fol. 541] rejects of your laminated glass windshields?

A. We had trouble no matter what source the sheets came from.

Q. Now, you were asked whether this million rejects out of five million windshields included ordinary replacements, such as where a windshield would be broken in transit or something of that kind. Will you please tell whether or not not the ordinary replacements would be very small compared to the million windshields?

A. It would be a very, very small part of them.

Q. Would they amount to even as much as 1 per cent.?

A. In percentage I have no definite figure on that, but I know the greater part of our trouble was not from replacement of that kind. It was from the other defects which I have already mentioned.

Recross-examination.

By Mr. O'Shea:

Q. You are the purchasing agent or director of purchases, which means you do the purchasing for the Ford Motor Company. Is that correct?

A. Yes, sir.

Q. You are not particularly familiar with the production department?

A. What do you mean by the production department?

Q. The manufacturing department; the department in which this laminated glass was produced.

A. I am very familiar with it.

[fol. 542] R. H. McCarroll, a witness produced on behalf of the defendants, having been duly sworn, testified as follows:

Direct examination.

By Mr. Smith:

Q. Mr. McCarroll, where do you live?

A. Dearborn, Michigan.

Q. Is that where we are this morning?

A. That is part of the same town, yes.

Q. And how far do you live from this Ford plant in which we are taking this testimony?

A. About five miles.

Q. Are you connected with the Ford Motor Company?

A. Yes, sir.

Q. How long have you been connected with the company?

A. Between sixteen and seventeen years.

Q. Continuously?

A. Yes, sir.

Q. And what is your present position, Mr. McCarroll?

A. In charge of chemical and metallurgical work.

Q. And how long have you held that position?

A. About eight years.

Q. Last past?

A. The past eight years.

Q. Do you remember the agreement between the Ford

Motor Company and the Triplex Safety Glass Company of North America, made on or about October 17, 1927?

A. I do.

Q. That was the agreement under which the Ford Company was licensed to make safety glass under the Triplex patents and process, was it?

A. Yes; sir.

[fol. 543] Q. And it was that agreement under which the Ford Company agreed to purchase from the Triplex Company half of the Ford Company's monthly safety glass requirements for the period April 30, 1928, to April 30, 1932?

A. It was.

Q. Were you in touch with the production and the acquisition by the Ford Company of the safety glass under that contract?

A. I was.

Q. Do you remember about when the Ford Company went into production of safety glass under that contract?

A. I would say it was the early part of 1928—the latter part of 1927.

Q. And do you remember whether along about May, 1928, you got into substantial production?

A. May, 1928, we were in quite substantial production; that is, for about the first time.

Q. Now, along about May, 1928, was there any change suggested in the laminating process of the Triplex Company?

A. There was.

Q. What was that change, Mr. McCarroll?

A. It was the substitution for what might be termed the alcohol immersion step by spraying the celluloid with a mixture of high-boiling solvents.

Q. Under the Triplex process, as I understand it, up to about May, 1928, alcohol was used for drying the sheets of pyralin that were used in the laminated glass?

Mr. O'Shea: Mr. Master, I would like at this point to renew my objection to the testimony on the grounds it is incompetent, irrelevant and immaterial; and so I may not interrupt may I have that objection to all testimony along this line?

[fol. 544] The Master: You may. Please answer the question.

A. Alcohol was used but I wouldn't call its purpose drying. Its purpose may more nearly be described as softening the celluloid sheet to allow lamination. At any rate, alcohol was used to that time and not to the same extent afterwards.

Q. And the change was in substituting something else for the alcohol?

A. It was.

Q. And what else was substituted for the alcohol under this change?

A. A mixture of high-boiling solvents. Carbitol was the name of one of them and dibutylphthalate I believe was the other one.

Q. Who suggested the change?

A. I believe most of the experimental work was done here. The suggestion came to me by A. C. Nixon.

Q. Who was he?

A. He was an employee of the Ford Motor Company under my jurisdiction.

Q. Under your supervision?

A. Yes, sir.

Q. In other words, the change came as a suggestion from the Ford Company and not as a suggestion from the Triplex Company?

A. I understand that to be true.

Q. Now, during the years 1928, 1929 and 1930, will you please state whether or not the Ford Motor Company and the Triplex Company, or either of them, made numerous changes or improvements in this process of making laminated glass?

A. Both of them made numerous changes and improvements.

Q. Was there any reason why changes should be made or improvements should be made during that period?

[fol. 545] A. There certainly was.

Q. What was the reason, Mr. McCarroll?

A. A product which we didn't consider satisfactory.

Q. That was during 1928, 1929 and 1930?

A. However, that applies most to the earliest produced. The earliest produced was by far the worse.

Q. The difficulties were mostly at the beginning?

A. Yes, sir.

Q. But did they extend during the entire period I have mentioned?

A. Some of them to a limited degree; most of the difficulty disappeared.

Q. But some extended over the entire period?

A. Yes.

Q. What was the trouble experienced?

A. The main trouble experienced was the formation of bubbles, resulting in separation and impaired vision.

Q. Were there any other troubles?

A. The other troubles were discoloration, strain cracks.

Q. And dirt?

A. Dirt getting in in the process or being in the celluloid sheets, strain cracks and loosening—separation of the edges.

Q. When you say "strain cracks" you mean cracks that appear in the glass?

A. Cracks that appear in the glass due to strain set up in the manufactured product.

Q. That is, after the glass was in the form of laminated glass these cracks appeared?

A. Yes, these cracks appeared. Sometimes they appeared immediately and sometimes later.

Q. Were these defects that you have mentioned trifling or were they serious?

[fol. 546] A. We considered them very serious.

Q. Do you recollect during the three years, 1928, 1929 and 1930, approximately how many windshields you had to manufacture or acquire from the Triplex Company to equip the cars you brought out during that period?

A. It was approximately five million.

Q. Approximately five million windshields?

A. Yes, sir.

Q. And approximately how many cars were brought out in that period?

A. Approximately four million.

Q. Then that means there were approximately 20 per cent. rejections in the windshields?

A. Rejections and replacements.

Q. Yes. In all 20 per cent.?

A. Yes, sir.

Q. What proportion of those were rejections for defects

in the windshields and what proportion just ordinary breakage due to accidents in the transportation?

A. That varied as time went on. In the early part the vast majority were due to replacements of those in service.

Q. I suppose it is fair to say in a new process like this the greater difficulties would be at first?

A. Yes.

Q. And you gradually ironed them out?

A. Yes, sir.

Q. Do you mean to say that any time during those three years your replacements of windshields due to just ordinary replacements, such as breaking a windshield in transportation or maybe one broken by accident, would amount to any very large proportion of the whole?

A. No, sir, not large proportion.

[fol. 547] Q. It would be a small proportion, would it?

A. Yes, sir.

Q. I have asked you about the three calendar years, 1928, 1929 and 1930. Now, as the accounting period here covers 1928 and 1929 and only the first five months of 1930, I would ask you whether or not the production of cars and windshields during the twenty-nine months was running at approximately the same rate as during the longer period of thirty-six months you have mentioned?

A. At approximately that same rate in proportion, yes, sir.

Q. Now, state whether or not there was any considerable number of rejections of windshields on the part of purchasers of cars from the Ford Company.

A. There was.

Q. A large number?

A. A large number, yes, sir.

Q. Will you state whether or not those applied to the laminated glass purchased from the Triplex Company as well as that you produced yourselves?

A. They did to both.

Q. About in what proportions between the two?

A. As far as I can remember, our records, as an average about the same proportion.

Q. About the same proportion of rejections in your product as in the Triplex product?

A. Yes, sir.

Q. What are wings that have been spoken of here with respect to open automobiles?

A. They are small glass mounted on the windshield supports at an angle to a bracket to deflect the air at the sides of the cars.

Q. What size are they about?

A. I would estimate they would be about fifteen inches long by eight inches wide.

[fol. 548] Q. One of those on each side of the car?

A. Yes, one on each side of the car. I don't remember the exact size.

Q. About what is the area of the windshield in ordinary cars? About four square feet?

A. About four square feet.

Q. In this period we have spoken of here, 1928, 1929 and 1930, were most of the cars you sold closed cars or were they mostly open cars?

A. I believe the greatest number were closed cars.

Q. Now, these wings, during this period of three years, will you state whether or not they were made of laminated glass?

A. They were.

Q. And was that standard equipment or optional equipment?

A. I am not sure of that question now.

Q. Were there any large amount of these wings produced in aggregate square feet of glass as compared with the aggregate square feet of glass in the windshields produced?

A. The proportion would be small, but I can't give you any definite figure on that.

Q. And did you or did you not experience the same troubles in these defects you have mentioned with respect to the wings as with respect to the windshields themselves?

A. I believe the same troubles were experienced but not quite to the same extent.

Q. I think it has been brought out in cross-examination of the preceding witness, Mr. Wibel, that during 1928, 1929, and I think the first half of 1930, or perhaps all of 1930, I don't recall, your Ford windshields were largely made of sheet glass as distinguished from plate glass. I mean the laminated glass windshields were so made.

A. That is true.

[fol. 549] Q. What have you to say about the laminated glass with respect to having the sheets not separate and things of that kind as compared with plate glass? Is there any superiority between the two?

A. I believe it is easier to get plate glass to adhere than it is sheet glass, but the nature of the break given by an object striking a sheet glass windshield has some advantages over the same break caused in the same way on a plate glass windshield.

Q. You mean after the windshield is in service?

A. Yes.

Q. You mean if a man is driving with a certain windshield, and a stone strikes the windshield?

A. Yes.

Q. Can you tell us a little more clearly what that is so the Master will understand the difference?

A. It is a little hard to describe except from pictures, but the surface of the glass being the strongest part, and that being removed in grinding the glass, you get a different type of fracture when, we will say, a small stone strikes a sheet glass windshield than you do when it strikes a plate glass windshield, and there is a little less danger of glass being thrown from sheet glass than there is from plate glass. It is a different type of break.

Q. I presume shortly after your company made the contract of October 17, 1927, with the Triplex Safety Glass Company the latter informed your company about the process that it was using?

A. Yes, sir.

Q. And did you learn what the process was?

A. I did.

Q. That was the process that was turned over to the Ford Company to use?

A. Yes, sir.

Q. Will you tell the Master whether or not it would have been feasible to use that process without change and pro-
[fol. 550] duce windshields for your cars commercially of proper quality?

A. First, from the standpoint of quantity it would have been impossible to produce a sufficient number with the description turned over as it was developed only for a small

scale production. There had to be equipment developed to handle the process on a commercial scale.

Q. That is as to quantity. Now, what about quality?

A. As to quality, in the light of future information we believe that the windshields that were produced by the process as used at that time—that is, the original process—were not satisfactory because they would not stand up a sufficiently long time in service.

Q. So that in your opinion it was necessary to change this process to get out a proper windshield in commercial production?

A. Yes, sir.

Q. And your company did have it changed?

A. We helped in that.

Q. Will you tell the Master whether or not the Ford Company has a careful inspection of materials that it requires; such, for example, as this glass and pyralin which were used in making laminated glass?

A. Yes, sir, I believe we have as careful an inspection as it is possible and feasible to arrange.

Q. And that includes not only these items but all the items you purchase, does it not?

A. Yes, sir; not only the raw materials but the finished product.

Q. It has been brought out here that the pyralin that was used, or a considerable part of it at least, was German pyralin. Will you state whether or not that passed your inspection and tests of our company?

A. It did.

Q. And state whether or not in your opinion it was a good and satisfactory quality of pyralin.

[fol. 551] A. We believe that it was.

Q. Now, afterwards I believe that the American producers—I mean producers in the United States of America—reduced their prices, I think Mr. Wibel said, to as low or a lower point than the German prices, and as I understand it you used some pyralin produced in the United States.

A. Yes, sir.

Q. Now, when you used the pyralin produced in the United States state whether or not you experienced defects in the laminated glass such as you have described.

A. I believe we would have to divide that into two questions. The pyralin in the United States was continuously improved also, and when we started using the German pyralin the pyralin that was obtainable here was of about the same quality as that, and as time went on the American manufacturers not only reduced their price but improved their quality.

Q. What about the Germans?

A. That improved but not quite as rapidly, but at all times within our specifications.

Q. But they at least improved it enough to keep it up to your standard of specifications?

A. Yes, sir.

Q. When you began to use pyralin sheets produced in the United States did all of these defects in the laminated glass disappear?

A. No, sir.

Q. You experienced the same kind of defects afterwards, did you?

A. Yes, sir.

Cross-examination.

By Mr. O'Shea:

Q. Do you know, Mr. McCarroll, whether it was the Ford Company who required the use of the German pyralin?

[fol. 552] A. I don't know that we could use the word "required." I know the material was purchased by the Ford Motor Company, and after sending a chemical engineer to Germany to inspect their manufacturing facilities and the quality of their product, holding him there until we got some over to this country, inspecting it here and making windshields from it, we decided to use it here and purchased it also for the Triplex use.

Q. Do you remember whether Triplex objected to the use of the German pyralin at all?

A. Several times they complained it was harder to handle. That was their chief complaint.

Q. Do you remember whether or not it was your opinion at the time the German pyralin was used that because of its use there was created some of these discoloration defects?

A. I would say that the German celluloid, at the time we originally started using it, in comparison with the American, discolored it at about the same rate. In the later days of its use the Americans had improved theirs more quickly, so that the German discolored at that time more.

Q. When did you change back from the German to the American pyralin?

A. I can't give you that date. It was a slow process, starting probably to take place late in 1930 or early in 1931.

Q. So that up until June, 1930, you used the German pyralin?

A. Not entirely, no.

Q. To the greatest extent of your production?

A. Yes, sir. The proportion varied.

Q. Do you know whether you got better results at the time you were using the American pyralin from the American pyralin than you did from the German pyralin?

[fol. 553] A. You mean when we started using the German pyralin?

Q. Let us say the first half of 1930.

A. I believe at that time the results as far as color goes were better in the American. The results as far as other defects, which are our major defects, were about the same.

Q. It didn't have any effect on discoloration?

A. Not much.

Q. The discoloration didn't amount to much?

A. It had decreased at that time. It was a minor reject in point of percentage at that time.

Q. When you say "at that time" you mean the first half of 1930?

A. No, I said late in 1930 or early in 1931.

Q. But you were still having trouble with the German pyralin because of the resulting discoloration?

A. And still having trouble with the American also.

Q. Let me finish the question please. You were still having trouble with the discoloration from pyralin in the early part of 1930?

A. Yes, sir.

Q. And in the early part of 1930 are you able to state whether you were having more trouble with the German pyralin than you were with the American pyralin?

A. You mean that question as to color only?

Q. Yes, let us put it as to discoloration first.

A. Yes, sir.

Q. Well, what other troubles were you having with pyralin in the early part of 1930? That is, the first half of 1930.

A. Openings, open edges, improper lamination, gradually resulting in openings and also a condition of the character of the glass that was not satisfactory.

[fol. 554] Q. Those were all due to the pyralin that was used at that time?

A. No; only partly due to the pyralin.

Q. You sometimes have a trouble that is referred to in the trade as haze, do you not?

A. Yes, sir.

Q. Are you able to state whether that condition was caused or resulted to a greater extent from the use of German pyralin than it did from the use of American pyralin?

A. In the later period, yes; in the earlier period, no.

Q. What do you mean by "the earlier period"?

A. I mean when we first started using the German celluloid the haze was no more than in the American product obtainable at that time.

Q. That was back in 1927 when you started?

A. We didn't get German celluloid as early as that.

Q. In 1928?

A. I can't give you the date when we first started to get German celluloid.

Q. But in the later period, namely, in the latter part of 1929 and early part of 1930, you were having more trouble caused by haze in the German pyralin than you were in the American pyralin? Is that correct?

A. Yes, sir.

Q. What pyralin are you using now, Mr. McCarroll?

A. I believe it is coming from three or four different manufacturers. I haven't had occasion to check it recently.

Q. Is it American pyralin?

A. Yes.

Q. Do you know whether or not it was at the Ford Company's request that the edges of the windshields were left unsealed?

[fol. 555] A. My understanding of that is that the edges were originally sealed according to the original Triplex recommendations, and that later on Triplex developed a transparent seal which they recommended and which we approved and which was adopted.

Q. When did they adopt the transparent seal?

A. I can't give you the date of that.

Q. Wasn't there a period in between the black sealing and the transparent sealing when there was no sealing at all?

A. Not that I remember.

Q. You don't remember whether there was any period?

A. I don't remember.

Q. You don't recall whether the Ford Company directed the Triplex Company not to seal the glass with a black seal, we will say?

A. Whether not to?

Q. Yes.

A. No, I don't.

Q. You don't know.

A. No.

Q. I understand that you consider that 20 per cent rejections and replacements is too high.

A. Yes, sir.

Q. What would you consider the proper rejections, let us say, without replacements in a factory efficiently run?

A. Naturally, we would like to get it as low as possible, and the figure we had set in our minds was we would like to get it down to one-tenth of that if possible.

Q. About 2 per cent.?

A. Yes.

Q. Rejections only?

A. Yes.

[fol. 556] Q. You testified, as I understood your testimony, that during the period from 1928 to the middle of 1930 you had about a million rejected windshields.

A. Rejections and replacements.

Mr. Smith: I think inadvertently you haven't stated it quite accurately. He stated during the three full years.

Q. How many would you say you had during the whole year 1928, whole year of 1929 and half of 1930?

A. I would say that would be in the proportion as thirty-six is to twenty-nine. In other words, twenty-nine thirty-sixths of a million. I can't give you that offhand.

Q. It is in round figures something like 800,000?

A. Something like that.

Q. How many of those were replacements? Can you tell?

A. As to definite figures, no.

Q. Can you tell approximately? Would there be 10 per cent.?

Mr. Smith: Mr. O'Shea, when you say "replacements" do you mean the ordinary replacements that would happen to any windshield, or do you include any defects?

Q. You understand what I mean, don't you?

A. I do not understand your question fully; no, sir.

Q. When I speak of replacements, Mr. McCarroll, I am not including any rejections. I am referring to only a replacement that was caused by an accident to a windshield or something of that sort after it had gone out and after it had passed your inspection as being a good windshield.

A. I can't give you definite figures on that without referring to our records.

[fol. 557] Q. Can you give approximate figures as to how many of the 800,000 are included as replacements? Can you say it was 10 per cent?

A. I couldn't like to hazard a guess as to that, not having referred to the records lately.

Q. This change in the process from the alcohol to the high-boiling solvents. You stated in your direct examination, as I understand it, that Mr. Nixon spoke of that to you.

A. He reported that to me.

Q. Was Mr. Nixon in touch from time to time with the Triplex engineers?

A. He was, as also were others.

Q. Any others in your factory?

A. Yes.

Q. You don't know then as to whether Mr. Nixon and others who reported changes in the process to you had discussed those changes with the Triplex people or not?

A. I certainly think they have.

Q. So you don't know where the original suggestion came from?

A. I believe it was originated with Mr. Nixon.

Q. You say you believe. Do you know it?

A. I have his written reports saying he did and I have every reason to believe it.

Q. You have his written report saying Mr. Nixon suggested the change from alcohol to high-boiling solvents?

A. I had a note on the subject at the time.

Q. Do you have it now?

A. No, sir.

Q. Do you know whether you can find it now?

A. I know I can't find it now. I have some of the notes of Mr. Nixon on the original process which I did find and can produce.

[fol. 558] Q. Is Mr. Nixon connected with the Ford Company now?

A. He is not, no.

Q. Do you know a Mr. Pfarr who was connected with the Triplex Company?

A. I remember the name. I don't remember the gentleman personally.

Q. Did you ever discuss this change to the high-boiling solvents with a man by the name of McCullough?

A. I don't remember talking to Mr. McCullough about that. At the time the original work was done on that I don't remember how closely Mr. McCullough was connected with it. He was connected very closely with it at its inception, but got out of touch with it some time later.

Q. Who was Mr. McCullough?

A. Mr. McCullough was in the employ of the Ford Motor Company under my department at the time the original Triplex work was done.

Q. Most of the windshields that were produced by you and Triplex in this period from 1928 to June, 1930, were made of sheet glass rather than plate glass, were they not?

A. Yes, sir.

Q. Were there any plate glass made by either of you during that period?

A. I don't believe there were as regular production. There were some experiments carried on in the latter part of that time.

Q. Sheet glass has the attribute of having waves in it, has it not?

A. Yes, sir.

Q. And that isn't true of plate glass?

A. That is correct.

Q. So that you are apt to have more separation as well as strain cracks in sheet glass than you are in plate glass? Isn't that a fact?

[fol. 559] A. When laminated under a press.

Q. And one of the reasons for that is because of the waves in the sheet glass, as I understand it.

A. That is one of the reasons, yes.

Q. Do you draw a distinction between discoloration of the laminated sheet and a laminated sheet that you speak of as impaired vision?

A. When I was referring to impaired vision then I was referring mostly to the fact so many bubbles formed you couldn't get good vision through the windshield, although there was of course some discoloration.

Q. But impaired vision might be bubbles without discoloration? Isn't that a fact?

A. No, sir; I never saw any with bubbles without discoloration. There was a varied amount of discoloration but all had some discoloration.

Q. So discoloration would include the term impaired vision?

A. When I said that I was thinking more of the bubbles impairing the vision, because if it turns somewhat dark, you can still see through it—kind of an outline—but when you have bubbles that impair the vision, why you can't.

Mr. O'Shea: I would like to have on the record counsel for plaintiff objects to all of the testimony of the witness on the ground that it is irrelevant and immaterial, and moves to strike it out.

Mr. Smith: We object to the motion to strike out.

The Master: The objection is overruled and exception noted to plaintiff.

Redirect examination.

By Mr. Smith:

Q. Mr. McCarroll, I am not sure I understood your answer exactly, but I think in answer to a question of Mr. [fol. 560] O'Shea's you stated that when sheet glass was used in making laminated glass under a press there was more likelihood of strain cracks than where plate glass was so used. Is that what you said?

A. Yes, sir.

Q. Do you lay any stress on the use of a press as distinguished from some other way of making laminated glass?

A. Yes, sir.

Q. Will you tell us what you mean by that?

A. When the pressure is applied with a press you are applying it with two platens which are parallel to each other and cannot follow the contour or waves in the glass;

whereas, when you press it with either liquid or gaseous pressure, pressing equally from all sides, the same objection does not come into the picture.

Q. What kind of pressure did you use to make this laminated glass at the outset in 1928?

A. Presses—platen presses.

Q. Was that the process the Triplex was using?

A. Yes, sir; it was.

Q. Did you make any change in the method of applying pressure later on as you developed this process?

A. Yes, sir.

Q. What change did you make?

A. We pressed the glass in other ways, the last of them being the autoclave. In between that was the Stokes press.

Q. What was the Stokes press?

A. The Stokes press was a press with rubber diaphragms.

Q. The autoclave is a method of putting the glass sandwiches in a receptacle and then introducing a liquid under pressure?

A. Yes, sir.

[fol. 561] Q. By the pressure you force the pieces of glass and the sandwich together. Is that the idea?

A. Yes, sir.

Q. Is that the present method you use for making laminated glass?

A. Yes, sir; it is.

Q. For about how long have you been using that method?

A. I would say the first production on that was probably about a year and a half ago.

Q. That would be the latter part of 1930 or the early part of 1931?

A. About that time. I cannot be absolutely sure of that date.

Q. Now, in making laminated glass from sheet glass using the autoclave method, is there any disadvantage in the laminated glass as compared with laminated glass made from plate glass in the same method?

A. Very little disadvantage if any in that case we believe.

Q. And take the matter of strain cracks. Is the sheet glass any disadvantage as compared to the plate glass in using the autoclave pressure?

A. Not as far as lamination goes; no, sir.

Q. Well, it was the lamination, as I understand, that produced the strain cracks?

A. Yes, sir.

Q. Is it your opinion the sheet glass would be as good as the plate glass from that aspect if used in an autoclave?

A. Yes, sir.

Q. Now, were the most defects in this laminated glass observed when you began the process or at the end? In other words, did the process improve?

A. Yes, sir. Most of the defects were at the beginning and the process did improve.

[fol. 562] Q. And you gradually ironed them out?

A. Yes, sir.

Q. And did that apply to this sheet glass laminated windshield?

A. Yes, sir.

Recross-examination.

By Mr. O'Shea:

Q. You use plate glass now as your standard equipment, don't you?

A. Yes, sir, we do.

Q. You use no sheet glass at all?

A. I believe there is some sheet glass being still used in commercial jobs.

Q. On trucks and things of that sort?

A. Yes, sir. What proportion I don't know. I understand there is some.

Q. As to pleasure cars you have some feeling there is an advantage to plate glass over sheet glass?

A. Yes, sir.

Q. What is that?

A. Improved vision.

Q. And why does the sheet glass not have as good a vision as plate glass?

A. Because in sheet glass, due to the irregularities in the surface, the light rays are deflected more in passing through the thick section rather than the thin section.

Q. And the irregularity in the surface is due to the waves in the sheet glass?

A. Yes, sir.

Q. So that is what causes the strain in the sheet glass—these waves? Isn't that so?

A. The waves in sheet glass cause the strain when laminated under a press, which does not touch evidently all portions of the sheet, yes, sir.

[fol. 563] When did you stop using the presses?

A. I can't give you that date offhand.

Q. Can you state whether you stopped before or after June, 1930?

A. I would imagine at that time we were doing part one way and part the other way.

Q. When you say "the other way" what do you mean?

A. I mean part in an autoclave and part under platen presses, although, as I say, I can't be sure of that date unless I refer to our records.

Q. Is it not a fact that prior to 1930 whatever was done with an autoclave was more or less in an experimental stage?

A. It was experimental at first and then gradually increased and went into production.

Q. And that you really got into the production in autoclaves after June, 1930? Is that not a fact?

A. I am not sure of the date.

(Adjourned until 2:15 P. M. at the offices of the General Motors Company.)

2:15 P. M.

Met pursuant to adjournment.

W. A. Fisher, a witness produced on behalf of the defendants, having been duly sworn, testified as follows:

Direct examination.

By Mr. Smith:

Q. Mr. Fisher, where do you live?

A. Detroit, Michigan.

Q. Are you an official of the Fisher Body Corporation?

[fol. 564] A. President.

Q. And how long have you been president?

A. Possibly five years, I would say, or more.

Q. Will you state whether or not the Fisher Body Cor-

poration purchases glass for all General Motors Company cars?

A. All closed cars.

Q. There has been testimony in this case about laminated glass, which means safety glass. Do you understand that, Mr. Fisher?

A. Yes, sir.

Q. Will you state whether or not there was any demand for laminated glass on the part of the public during the years 1927 and 1928?

A. I would say no.

Q. What, in your opinion, was the reason for the lack of public demand at that time?

A. Well, there was no public demand at that time due to the fact that the general public knew very little about laminated glass, and at $4.80 a square foot the cost to equip a body with laminated glass was prohibitive.

Q. Up to the spring of 1928 to what extent had General Motors Company used laminated glass in its cars?

A. Why, some laminated glass was used in custom built bodies by Fleetwood Body Corporation and occasional sets purchased for Cadillac and Buick jobs; only when specified by the customer.

Q. It was not standard equipment at all?

A. No.

Q. Can you tell what quantity of laminated glass was purchased by the Fisher Body Corporation from the Triplex Safety Glass Company of North America during the year 1927?

A. The Fleetwood Body Corporation purchased 230 square feet at $4.80 a square foot, and the Fisher Body [fol. 565] Corporation Division purchased 2084 square feet at the same price.

Q. In other words, the entire purchases of laminated glass by the Fisher Body Corporation from the Triplex Company during 1927, as I figure, were about 2300 square feet?

A. Correct.

Q. And for that you paid $4.80 a square foot?

A. Correct.

Q. What was the attitude of the officials of the Fisher Body Corporation in the spring of 1928 toward the adoption of laminated glass as standard equipment in Cadillac and LaSalle cars?

A. Some of the officials of our company felt that Cadillac would not realize in increased sales the extra cost of equipping bodies with laminated glass due to its being relatively unknown to the buying public; others felt that while there was no call for it, the Cadillac Motor Car Company was advertising safety in automobiling and if the product could be obtained at a price we could afford to pay, the Cadillac Motor Car Company should give this extra protection to its customers.

Q. What was the difficulty about adopting laminated glass by the Cadillac Company at that time—this question of price?

A. Yes.

Q. Now, did the Triplex Safety Glass Company, late in 1927 or early in 1928, quote the Fisher Body Company prices on the use of Triplex glass as standard equipment in Cadillac and LaSalle cars?

A. Yes.

Q. Did your company accept the offer?

A. No.

Q. Why?

[fol. 566] A. In the judgment of the officials of our company the sales advantage expected from the adoption of laminated glass was not worth the price asked by the Triplex Company.

Q. Did the Pittsburgh Plate Glass Company in the spring of 1928 quote the Fisher Body Company prices on the use of Duplate safety glass as standard equipment in Cadillac and LaSalle cars?

A. Yes.

Q. Will you please state to the Master the circumstances leading up to the arrangement, if any, that was made at that time for the use of Duplate by the Cadillac Motor Company?

A. No consideration was given to the general use of laminated glass in Cadillac and LaSalle bodies until Mr. Higgins of Pittsburgh Plate Glass Company, came to me and offered to supply our requirements of laminated glass for Cadillac and LaSalle production at a price of $1.75 per square foot plus an amount for necessary edge work. Although this price was below Pittsburgh's cost of production, Mr. Higgins felt that in no other way could laminated glass be put before the public so effectively as through its

adoption by the Cadillac Motor Car Company, and that the loss incurred by his company in selling the glass at this price would be considered as advertising expenditure.

Q. Mr. Fisher, will you state whether or not your company ever considered the Triplex Safety Glass Company as a source for the acquisition of laminated glass for the cars produced by your company?

A. Yes.

Q. And did you ever adopt the Triplex Company as your source of supply?

A. Yes; part of our supply.

Q. When was that?

[fol. 567] A. I think it was the last year that we built bodies in Fleetwood, Pennsylvania, and I think that was about 1929, if I remember correctly.

Q. Do you remember whether you bought any considerable amount of glass from them at that time?

A. I think they had all of Fleetwood's business, or the biggest portion of it.

Q. And after 1929 were they your source of supply for any of this business?

A. Yes, I think we bought some glass from them still in 1930.

Q. Do you remember to what extent?

A. No.

Q. Turning back to 1928, will you state whether or not you considered the Triplex Company as a source of supply for your safety glass requirements, if any, in that year?

A. Yes.

Q. Did you use them as your source of supply?

A. Yes, in 1928.

Q. To what extent?

A. I couldn't give you those figures.

Q. Do you remember the prices?

A. No.

Q. Now, what have you to say about this question of public demand for safety glass, say from 1928 on? Has there been a real public demand for this article, or has it been a question of the automobile makers in some of the cars such as Cadillac endeavoring to induce the trade to accept safety glass? Which has been the history of it?

A. I don't think there is any public demand for it.

Q. You don't think so?

A. No. I think in a good many cases it is used for selling advantage—sales.

[fol. 568] Q. And the use of safety glass, in so far as it has been used, as I understand you, has been an effort on the part of the manufacturers of the cars to get the people to use it?

A. Yes.

Q. Why is that? On the ground of protection of life and limb?

A. Just from the theory of fear. That is all.

Q. Take, for example, the Buick car. Has it ever had safety glass as standard equipment?

A. No.

Q. Take any car.

A. The Chevrolet has never had any laminated glass and they have had for one or two or three years the biggest production in this country.

Q. And even the Buick does not have any laminated glass even in the windshield?

A. No.

Cross-examination.

By Mr. O'Shea:

Q. Mr. Fisher, if a product were being sold at the rate of ten million square feet a year to the users of that product, would you still consider there was no public demand for it?

A. Yes.

Q. You would consider that there was no public demand in spite of the fact that it was being used at the rate of ten million square feet a year?

A. Yes.

Q. Did your company establish a laminated glass factory for the manufacture of laminated glass?

A. Yes.

Q. Wasn't it your thought that there was some outlet for that laminated glass when you established that factory?

[fol. 569] A. We thought there was an improvement in the construction.

Q. But the question was, Mr. Fisher, when you established your laminated glass factory didn't you think that there was then a public demand for the use of laminated glass?

A. A small demand, yes.

Q. When did you establish that factory?

A. I can't tell you that.

Q. Can you tell me the year—1928, 1929, 1930?

A. No.

Q. As I understand it, when Mr. Higgins came to you first with the proposal that your company establish laminated glass and quoted a figure of $1.50——

A. $1.75.

Q. Do you remember what year that was? For the purpose of refreshing your recollection, the Pittsburgh Plate Glass Company opened their laminated glass business in January, 1928.

A. They quoted that price in the spring of 1928.

Q. Were you then receiving quotations from the Triplex Safety Glass Company for laminated glass?

A. Yes.

Q. Do you remember what their quotations were?

A. No.

Q. If I were to say that the quotations were $2.55, would that surprise you?

A. It is my recollection it was either $2.25 or $2.55. I forget.

Q. Do you recall as to whether the $2.20 or $2.25 was for a contract to supply your entire requirements; whereas, if the contract was only for a part of the requirements, it would be $2.55? I mean by that question is that the recollection you have of the general state of prices from Triplex at that time?

[fol. 570] A. I don't recollect whether it was for part of our production or all.

Q. Do you recollect a conference with Mr. Hunt, the representative of the Triplex Company, in or about the year 1928 when he asked you why you had withdrawn an order, or stopped the forwarding of templates to the Triplex Company?

A. No, I don't.

Q. Well, is it the fact that when you did buy from the Duplate Corporation it was primarily on this question of lesser price?

A. Yes.

Q. Do you recall what your company, the Fleetwood Company, paid for such glass as it did purchase from Triplex Safety Glass Company?

A. The only record I have here they paid $4.80.

Q. Now, is it the fact that occasionally, even as far back as 1927, customers would ask for laminated glass?

A. Yes, sir.

Q. And those requests came through, I assume, the local agencies and then were remitted up to your factory?

A. No, they came through our divisions.

Q. Your so-called divisions—that is where the customer was in contact?

A. Yes, sir.

Q. So that there were some customers at least in 1927 who were asking for cars equipped with laminated glass?

A. Yes, sir.

Q. Now, at what point do you consider that a public demand is created? What I mean is how many customers would have to ask to have their cars equipped with laminated glass before you would consider that a real public demand was created?

[fol. 571] A. I would say about 60 per cent.

Q. Sixty per cent. of the purchasing public? Perhaps you can help us out somewhat. What would be considered as the number of cars sold, let us say in 1928?

A. I don't know how many cars offhand were sold.

Q. There were more than a million I guess sold in 1928, were there?

A. Yes, sir, there was.

Q. Of course, that million includes all the cheaper cars as well as the more expensive cars?

A. Yes, sir.

Q. I notice you have been reading from notes. Did you prepare those notes yourself, Mr. Fisher?

A. Yes, sir.

Q. From your records?

A. Yes, sir.

Q. They were not suggested to you by anyone?

A. No, sir, they were not.

Redirect examination.

By Mr. Smith:

Q. Mr. Fisher, would the difference in price of laminated glass such as would exist between $2.20 to $2.25 a square

foot and $1.75 a square foot, would that be a material difference to your company in making up its mind which glass to buy?

A. Very much.

Q. In the automobile industry what do the makers have to consider in this matter of putting expense on a car? Is that important?

A. Very important.

Q. And what is the effort of the trade without stinting the quality? What is your effort in the matter of price? Keep it low or keep it high?

A. Keep it low.

[fol. 572] Recross-examination.

By Mr. O'Shea:

Q. Have you in mind any accessory used in automobiles where the public demand amounts to as much as 60 per cent. of the number sold?

A. Bumpers.

Q. Any other one than that, than the bumpers?

A. What do you term accessory?

Q. Well, I guess, any part of a car. I would term perhaps laminated glass as an accessory; free wheeling as an accessory.

Mr. Smith: Would you include a self-starter?

Mr. O'Shea: Perhaps yes, a self-starter.

A. I don't think free wheeling is an accessory any more.

Q. It is standard equipment as distinguished from an accessory?

A. Laminated glass with us has always been an accessory.

Q. But free wheeling is not?

A. It never was until it was adopted universally on a car.

Q. Aren't there some cars that have now adopted laminated glass as standard equipment?

A. Yes, sir.

By Mr. Smith:

Q. What cars use laminated glass as standard equipment? You said there were some.

A. Lincoln cars.

Q. Any others?

A. There might be others but I wouldn't say positively.

Q. What about Cadillac?

[fol. 573] A. Of course, you understand Cadillac and LaSalle always have since the adoption of laminated glass.

By Mr. O'Shea:

Q. As standard equipment?

A. As standard equipment.

Q. Would you mind putting the year in?

A. I wouldn't say the exact time.

By Mr. Smith:

Q. Being ignorant in the automobile business, Mr. Fisher, as I understand it, the cars which now use laminated glass as standard equipment throughout the car—that is, not only the windshields but in the body lights—are Lincoln, Cadillac and LaSalle. Can you mention any others?

A. Well, there are a few more that have adopted it but I don't know anything about their product so I wouldn't answer it. Studebaker advertise it, but I wouldn't answer for them.

Q. Well, these cars that you know have adopted it as standard throughout, are those cars in the low price field or in the high price field?

A. From about $800 on up I would say.

Q. Well, the ones you have mentioned are the Lincoln and the Cadillac and LaSalle. Those aren't in the $800——

A. I would say Studebaker from $800 on up.

Q. Leaving Studebaker out, I suppose it is fair to say Lincoln, Cadillac and LaSalle are in the high-priced class as opposed to the low price class?

A. From two thousand up.

Q. And in the trade from two thousand up, is that considered a high priced car?

A. Yes, sir.

[fol. 574] J. KING HARNESS, a witness produced on behalf of the defendants, having been duly sworn, testified as follows:

Direct examination.

By Mr. Smith:

Q. Mr. Harness, where do you live?
A. Detroit.
Q. And how long have you lived in Detroit?
A. Sixteen years.
Q. Are you a member of the Bar?
A. Yes.
Q. And how long have you been admitted?
A. I think about twelve years.
Q. And what is the nature of your practice—what kind of practice? Is it common law practice or patent practice?
A. Patent practice.
Q. Entirely?
A. Entirely.
Q. I believe you are the senior partner in the firm of Harness, Dickie, Pierce & Hann with offices in this building?
A. Yes.
Q. I believe in addition to patents you handle trade-mark cases?
A. Yes.
Q. I suppose patents is the principal end of the business?
A. Patents and trade-marks. Of course, patents are the predominating part.
Q. Have you had considerable experience in your practice in considering and passing upon patents of various kinds?
A. Yes.
Q. And have you had occasion to negotiate the sale of licenses under patents?
[fol. 575] A. Yes, quite a few.
Q. Frequently?
A. Yes.

Mr. Smith: I propose to ask the opinion of this witness as to what is reasonable royalty. If you wish to examine him any further as to his qualifications before I put that question, you are at liberty to do so.

Mr. O'Shea: I will reserve all questions until cross-examination.

Q. Have you any relationship to the Chrysler Corporation—that is, the Chrysler Automobile Company?

A. That corporation is one of my clients.

Q. And are you engaged on their business continuously?

A. Yes.

Q. Do you handle the Chrysler patent affairs?

A. Yes.

Q. And in addition to that do you have your own private patent practice?

A. Yes.

Q. Did you ever handle any patent business for the Ford Motor Company?

A. Yes, I organized the patent department of the Ford Motor Company. I was in the employ of that company from 1916 until 1921.

Q. And while you were in the employ of the Ford Company during that period were you in contact with their patent business?

A. Yes. From the time I organized the patent department there I had charge of all their patent work, not only the obtaining of patents but the negotiating of licenses, defense of lawsuits.

[fol. 576] Q. Did you negotiate the matter of the giving and receiving of all patent licenses of the Ford Company during the time you were connected with the company?

A. Well, I wouldn't say during all the time I was connected with the company that I did so. I did for the latter part of the term of my employment there.

Q. How long—two or three years?

A. Yes.

Q. How long have you been employed by the Chrysler Company?

A. I began representing the Chrysler Corporation in 1921.

Q. Now, since 1921 will you state whether or not you have conducted all the negotiations for the granting or receiving of patent licenses by the Chrysler Corporation?

A. Yes. I might say there that in 1921 it was not the Chrysler Corporation. It was at that time the Maxwell Motor Corporation.

Q. Did it become the Chrysler Corporation later?

A. Yes, they changed the name to the Chrysler Corporation in 1925 I believe.

Q. There have been some companies merged that formed this corporation I presume?

A. No. The Maxwell and Chalmers Corporations were merged in 1921 to form the Maxwell Motor Corporation, and then they later produced the Chrysler car and the name of the corporation was changed to the Chrysler Corporation.

Q. Do you have an office at the plant of the Chrysler Corporation in this neighborhood?

A. Yes, I have an office there.

Q. Where is their plant?

A. On Oakland Avenue.

Q. Is that in the City of Detroit?

A. It is in the City of Highland Park, a suburb of Detroit.

[fol. 577] Q. That is one of the suburbs that is completely surrounded by Detroit, is it not?

A. That is right.

Q. I should have asked you, Mr. Harness, whether or not you have read the so-called Benedictus patent on laminated glass, United States Patent No. 1,182,739.

A. Yes, I have.

Q. Mr. Harness, what would have been a reasonable royalty on January 1, 1928, for a non-exclusive license under the Benedictus Patent on laminated glass, United States Patent No. 1,182,739, for the life of the patent, on the assumptions that:

1. The patent will expire on May 9, 1933.

2. The patent brought to the art what is known as laminated, or non-shatterable glass, which is peculiarly advantageous in the manufacture of automobile windshields and body lights because it is a glass which will crack but will not shatter and break into pieces, thereby reducing to a minimum the danger of personal injuries in automobiles due to flying glass.

3. No other process for the manufacture of non-shatterable glass is commercially available.

4. This laminated glass, properly made, has the same visibility, over an extended period, as ordinary plate and/or sheet glass.

5. The commercial development of this patent was begun by the assignee of the patent in 1926, and prior to January 1, 1928, approximately $250,000 was spent for the purpose of creating public interest in and demand for this non-shatterable glass by means of advertisement and other forms of publicity in well-chosen periodicals of national circulation and well-chosen daily newspapers.

[fol. 578] 6. In 1926, 1153 square feet of this patented glass were sold by the assignee of the patent; in 1927 the same company sold 50,000 square feet of laminated glass and persuaded the Chrysler Motor Company and the Hudson Motor Company to permit their respective organizations and the public to be circularized to the effect that laminated glass could be obtained as optional equipment for windshields at a price of $4.80 per square foot of laminated plate glass. The Chrysler organization was offered laminated sheet glass at $3.60 per square foot. Very little business was obtained in this manner from either company.

7. On October 17, 1927, a contract had been made between the assignee of the patent and the Ford Motor Company under which the Ford Motor Company agreed to install this laminated glass as standard equipment in windshields on its cars and to purchase up to one-half of its requirements for a four-year period beginning April 30, 1928, from the owner of the patent at the cost of production to the owner of the patent or to the Ford Company, at the option of the Ford Company, plus 20 cents for each windshield so purchased, and the Ford Company being given a license under the patent which continued for the life of the patent.

8. In 1928 the assignee of the patent would sell 161,564 square feet of laminated plate glass, 51,515 square feet of laminated sheet glass to others than the Ford Motor Company, 1,924,781 square feet of laminated sheet glass under its Ford contract, or a total footage of 2,137,860 square feet; in 1929 the assignee of the patent would sell 195,788 square feet of laminated plate glass, 181,041 square feet of laminated sheet glass to others than the Ford Motor Company, and 6,236,524 square feet of laminated sheet glass under its Ford contract, or a total footage of 6,616,353 [fol. 579] square feet; in the first five months of 1930 the

assignee of the patent would sell 57,372 square feet of laminated plate glass to others than the Ford Motor Company, 66,192 square feet of laminated sheet glass to others than the Ford Motor Company, 98,221 square feet of laminated plate glass and 1,890,818 square feet of laminated sheet glass under its Ford contract, or a total footage of 2,112,603 square feet; and that Duplate Corporation, as the recipient of the license the value of which is being sought by this question, would sell 1,100,000 square feet of laminated plate glass in 1928, 2,320,000 square feet in 1929, and 760,000 square feet in the first five months of 1930. The various amounts mentioned in this paragraph are approximate amounts.

9. While laminated glass was produced in commercial quantities beginning in the year 1926, machinery, equipment and technique had not been devised or developed to the point where laminated glass could be manufactured on a scale necessary to supply automobile companies desiring it as standard equipment on windshields, without losses through breakage or rejections due to defective product amounting to approximately 20 per cent. of the entire output from January 1, 1928, to June 1, 1930, in the experience of both the Ford Motor Company and Duplate Corporation, and that a constant process of trial and error, involving the constant replacement of machinery and equipment, reduced the said losses in the case of Duplate Corporation to approximately 11 per cent. for the first five months of 1930.

10. Duplate Corporation would purchase glass and pyralin (the constituent elements of laminated glass) at the market and sell approximately 4,000,000 square feet of laminated plate glass during the period January 1, 1928, to June 1, 1930, but would make those sales at a heavy loss, [fol. 580] due in part to the necessity of selling the product at a price low enough to induce automobile manufacturers to use it.

11. During the period from January 1, 1928, to June 1, 1930, there would be no widespread demand for laminated glass on the part of automobile purchasers, but such sales of laminated glass as would be made would be occasioned to a greater extent by the efforts of automobile manufacturers to force the purchasers of automobiles to take the

glass than by any desire of the purchasers to have it; and that it was almost impossible to induce automobile manufacturers to purchase laminated glass for standard equipment at the true cost of manufacture plus a fair manufacturing profit during this period, because it would increase the cost of the automobile without, in their opinion, returning a commensurate sales advantage.

12. A five- or seven-passenger automobile contains a glass area including windshield and body lights of approximately twenty to twenty-five square feet, depending upon the size and model of the car, approximately four square feet of which goes into the windshield, and that the sale price of glass to the manufacturer of windshields or body lights was about 40 cents a square foot for plate glass and 6 cents a square foot for sheet glass, and that laminated glass involves double the amount of glass necessary to make an ordinary windshield and approximately four square feet of pyralin, costing approximately 20 cents a square foot, making the cost of the materials entering into an average plate glass windshield rise from $1.60 to $4, without giving effect to the increased cost of manufacture.

13. During the period from January 1st, 1928, to June 1st, 1930, a selling price of laminated glass quoted by the [fol. 581] assignee of patent to manufacturers of automobiles for use as standard equipment for windshield and/or body lights would follow approximately the following trend:

During the period from January 1st, 1928, to July 1st, 1928, the following prices would be in effect:

"B"

	Up to 1,000 sq. ft. per day	Up to 2,000 sq ft. per day	Up to 5,000 sq. ft. per day	Up to 10,000 sq. ft. per day
W/Ss-Plate	$3.23	$3.16	$3.06	$2.79
Other Body Lts.—Plate	2.96	2.87	2.77	2.50
W/Ss-Sheet	1.87	1.79	1.70	1.41
Other Body Lts.—Sheet	1.80	1.72	1.62	1.34

During the period from July 1st, 1928, to June 1st, 1930, the following prices would be in effect:

	Up to 1,000 sq. ft. per day	Up to 2,000 sq ft. per day	Up to 5,000 sq. ft. per day	Up to 10,000 sq. ft. per day
W/Ss-Plate	$2.81	$2.74	$2.64	$2.37
Other Body Lts.—Plate	2.66	2.57	2.47	2.20
W/Ss-Sheet	1.87	1.79	1.70	1.41
Other Body Lts.—Sheet	1.80	1.72	1.62	1.34

The prices under both of the foregoing schedules were what the assignee of the patent attempted to get but it reduced these prices in several instances in order to obtain business.

15. The term "Assignee of the Patent" refers to Triplex Safety Glass Company of North America, plaintiff in this accounting.

Mr. O'Shea: Plaintiff objects to the question as the whole is not founded upon the evidence produced in this case, and [fol. 582] particularly objects to that section of Item 6 of the hypothetical question reading as follows: "Very little business was obtained in this manner from either company." That objection being based on the ground that there is evidence in the record to the effect that substantial business was obtained from each of those companies.

Plaintiff objects to Item 7 of the hypothetical question on the ground that this particular item of the hypothetical question does not properly state the terms of the Ford contract referred to in the item in that the term of the license agreement was not limited to the life of the Benedictus patent in suit, No. 1,182,739, but was limited to the life of any patent that was included in that agreement and the agreement includes all inventions, improvements, methods, mixtures and processes covered by any and all Letters Patent of the United States or Dominion of Canada now or at any time hereafter owned, controlled or in the possession of the Triplex Company; and in other respects Item 7 does not properly nor adequately set forth the terms of the said license agreement.

Plaintiff further objects to Item 8 of the hypothetical question for the reason that it is not founded upon the testimony heretofore adduced in the case and does not properly

state that testimony, but assumes a state of facts for the future which might or might not have existed and which could not possibly be in the mind of a person estimating what would be a reasonable royalty in 1928.

Plaintiff further objects to Item 9 of the hypothetical question on the ground that the assumptions in that item are not only not borne out by the testimony heretofore brought out in the record, but are specifically contrary to [fol. 583] such testimony already in the record.

Plaintiff objects to Item 10 of the hypothetical question on the ground that it assumes facts which are not within the testimony heretofore adduced in the case, but on the contrary, assumes facts which are directly contrary and opposed to such testimony.

Plaintiff objects to Item 11 of the hypothetical question on the ground that it assumes facts which are not brought out in the testimony; on the further ground that the facts assumed in Item 11 are contrary to such facts heretofore brought out in the testimony.

Plaintiff objects to Item 12 of the hypothetical question for the reason that it assumes that the price of ordinary plate glass used in the construction of automobiles is sold at 40 cents a square foot and that ordinary sheet glass, as distinguished from laminated glass or glass used for the production of laminated glass, is sold at a price of six cents a square foot, there being no testimony in the record of those facts. The question further assumes that the average cost of an ordinary plate glass windshield, as distinguished from a laminated glass windshield made of plate glass, is $1.60 and there is no testimony in the record with respect to that cost for an ordinary plate glass windshield.

Plaintiff objects to the last paragraph of Item 13 of the hypothetical question in that it states that the patent owner or assignee, as he is called in the hypothetical question, "reduced these prices in several instances in order to obtain business"; whereas, the testimony heretofore adduced in this case shows that the owner of the patent was forced [fol. 584] to reduce its prices by reason of the competitive prices of this defendant.

The Master: The objections are overruled for the present and the witness will answer the question, and his answers will be considered in the light of the plaintiff's objections.

(Exception noted to plaintiff.)

A. The statement of facts which existed previous to January 1, 1928, was such that a prospective licensee would be faced with a considerable gamble. The patent had only five more years to run; the license to be obtained was a non-exclusive one, so that licensee would have no assurance against competition involving the same process; the process was not fully developed and the prospective licensee would know that he had to spend a considerable amount of money in further development work; the proposed construction was of necessity considerably more expensive than the constructions which it was to replace, and there was no indication that motor car manufacturers would be willing to bear the additional expense in order to secure the advantages of shatter-proof glass as standard equipment in their automobiles. These considerations presented such an element of chance that I would expect a reasonable license arrangement to be predicated upon payment to the patentee of a percentage of the profits derived from the business rather than a royalty which would be paid irrespective of whether profits were made. In other words, the patentee should have been willing to have taken the same gamble as the licensee, so that if no profits were made, the licensee would not be additionally penalized by the obligation to pay royalties from a business which was being operated at a loss.

Assuming, however, that the licensee were willing to take the additional gamble of agreeing to pay a royalty irrespec- [fol. 585] tive of whether or not he made profits, I think the most logical basis for royalty payments would be the agreement which the patentee had with the Ford Motor Company. To say the least, considerable difficulty would be met in obtaining any higher percentage of royalty from any other motor car manufacturer than the Ford Motor Car Company had agreed to pay. In that agreement shatter-proof glass was to be furnished to the Ford Motor Company at cost, plus twenty cents on each windshield, which included four square feet of glass. This contemplated an overall profit of twenty cents for each four square feet of glass, and I do not think that it would be fair to assume that more than 10 per cent. of this profit should be considered as royalty. The remainder should be considered as manufacturing profit based upon the manufacturing investment, effort and chance. Upon this basis, two

cents of each twenty cents profit would be allocated to royalty, making a footage royalty of one-half cent per square foot.

Q. Mr. Harness, as I understand your testimony, for the reasons you have given, in your opinion the fair royalty would be one-half cent per square foot on the laminated glass.

A. Well, I would say it should not be more than that.

Q. Not more than one-half cent per square foot?

A. Everything considered, it might be reasonably and fairly said it ought to reasonably be less than that when you consider the Ford contract gave the Ford Company the right to purchase 50 per cent. of its requirements without royalty or without profit whatever to the patentee, and when you also consider that they had a free license after, I think, some time in 1932.

Q. As I understand it, when you said the Ford Company had the right to purchase one-half of its requirements free [fol. 586] of royalty, I think the word "purchase" was not the proper word. As I understand the contract, it gave the Ford Company the right to manufacture one-half its own requirements without royalty.

A. It is the same thing.

Q. So when you come to look at this twenty cents per windshield that the Ford was paying, that seems to have covered two things at least. Is that right?

A. Unquestionably it covered manufacturing profit as well as any royalty that might have been included for the patent.

Q. It included manufacturing profit and royalty to the Triplex Company on half the production, and it included any royalty that the Ford Company would otherwise have paid on its half of production? Is that right?

A. That is correct.

Q. So that from that aspect alone, instead of being twenty cents, it would have been ten cents, would it not?

A. You mean the overall profit?

Q. Yes. If you allow it to cover the Ford's production as well as its own production, you would divide it in two; instead of twenty cents, it would be ten cents, wouldn't it?

A. I think that would be a fair way to look at it.

Q. Supposing a manufacturer receives costs plus a cer-

tain fixed price for his product, what does that certain fixed price have to cover?

A. Well, it has to cover the cost of the material used as well as the cost of fabricating those materials into the finished article.

Q. In the question I put to you I am assuming that the manufacturer gets the cost of his raw materials and the cost of fabricating. Now, the twenty cents that he gets in addition, what does that cover?

[fol. 587] A. That would largely cover manufacturing profit.

Q. Well, now, in the manufacturing business will you state whether all years are profitable years?

A. There is no question but what many years are not profitable years.

Q. And does the manufacturer have to consider in taking his compensation both the profitable years and the unprofitable years?

A. He certainly does.

Q. Length of loss in unprofitable years?

A. Yes.

Q. What kind of year are we having now—this year 1932?

Mr. O'Shea: I think this is going far afield. I object to it on the ground it is irrelevant and immaterial.

Mr. Smith: I think it is fair enough.

The Master: I think it is going a little far but we might hear what the witness has to say about it.

Q. What kind of a year is this?

A. Well, I think most manufacturers have found this an extremely difficult year to make any profit.

Q. Now, on the basis of about four square feet of glass in each windshield, what would that make the reasonable royalty in your opinion per windshield?

A. Well, as I said before, I think not more than 10 per cent. of the overall profit should be considered as royalty, which would be two cents a windshield.

Cross-examination.

By Mr. O'Shea:

Q. Mr. Harness, you said you had read and understood the Benedictus Patent in suit, No. 1,182,739?

A. I have read it. I don't know that I understand it as [fol. 588] well as I might if I had been involved in trying it in law suit, but I think I understand generally what it covers.

Q. Will you state what you understand it covers with particular reference to Claim 12?

A. My understanding of that claim is that it covers a sheet of glass which was fabricated of two separate glass portions, between which was inserted a sheet of celluloid, which celluloid is in turn coated on its opposite sides with gelatin, substantially moisture free.

Q. Well, it covers any laminated glass, does it not, consisting of two sheets of glass with an interposed sheet of celluloid having gelatin on its opposite sides, which is substantially free from contained moisture?

A. Yes, I would say that is substantially it. I will say further I had to go on the assumption, in view of the way the question has been put to me, that this patent covered the only available method of making shatter-proof glass.

Q. In answering the hypothetical question have you taken into consideration the utility and advantages of this patent?

A. Yes, I think I have fairly.

Q. What do you consider the advantages of the patent?

A. Well, the fact that the glass affords the person using it with a considerable amount of safety and that it cannot be shattered so as to cut the person whom it is supposed to protect.

Q. In answering the hypothetical question did you take into consideration in that answer the opinion of the District Court of the United States as to the scope of this patent, its utility and advantages?

A. I don't know that I consciously did. I think I read that opinion some time ago and probably subconsciously carried part of its thought in my mind, although I didn't [fol. 589] consciously read the opinion before formulating my answer to this question.

Q. As I understand it then, you have not recently read the opinion of the District Court?

A. No, it has been some time.

Q. Did you ever read the opinion on this patent of the United States Court of Appeals for the Third Circuit?

A. Yes, I believe I read that some time ago.

Q. Was your mind in the same condition in respect to

that when you answered this question, namely, that you didn't have it consciously in mind?

A. Yes.

Q. Now, if you assumed, as stated by the District Court, that this was a pioneer patent entitled to a broad construction and bringing a new product to the art, would that change your conclusion with respect to what would be a reasonable royalty?

A. No; I was of necessity bound to consider it in that light because of Section 3 of the hypothetical question, which states that no other process for the manufacture of non-shatterable glass is commercially available. I have my personal doubts as to the truth of that, but I have considered that as though it were the fact.

Q. We must do that, I take it, in view of the decisions of the Court?

A. Yes.

Q. I assume, Mr. Harness, in your experience you have drawn a great many license agreements for your clients?

A. Quite a number.

Q. Can you mention offhand a license agreement in which your client paid as a royalty two cents for an article selling for $4.80?

A. Why, I haven't thought of it in that light. Whether I could think of any such thing or not I don't know. I [fol. 590] would say this generally, that when you consider what is the cost of an item it is difficult to say because the patentable portion of the item may represent but a small part of the component cost of the completed article. In attempting to answer this question I have not attempted to draw any parallels between specific things which I have negotiated licenses for either for or against the patent for the simple reason that I have always felt and still feel that it is impossible to draw exact parallels because one device may be of more importance to the industry than another. I may think it is of more importance and you or someone else may think it is of less importance. The cost of the thing may be computed by one person to represent a certain figure; whereas, by another person it may be computed to be an entirely different figure, depending entirely upon what things each individual figured into the cost. So that in answering this question, as I say, I haven't tried to draw

any direct parallels. I have answered it purely from the standpoint of my general experience, particularly in the automobile field in license contracts. Of necessity this matter of royalty is not a fixed science. No one can tell, and I certainly don't propose to tell that a royalty can be set arbitrarily at some certain figure and say that is right and everything else is wrong. You must live with this thing and sort of get the feel of it to tell in general about what you would expect to pay for a particular thing and what you would expect your clients to be willing to pay.

Q. In my question I made an error. I should have asked you whether in your experience you have drawn any licenses or advised the making of any licenses as low as two cents for an article costing $19.20 instead of $4.80. I assume your answer would be the same?

A. Yes. I will further say this, that in the case of the automobile particularly, the higher price that you put on [fol. 591] the finished product—in other words, the higher overall cost of the automobile that you are going to make, the lower the royalty you are going to be able to obtain.

Q. I gather from your last answer that your conclusion is that in fixing the royalty under the conditions that you have in mind it is a question of negotiations between the owner of the patent and the prospective licensee; that the owner tries to get as much as he can and the licensee tries to give him as little as he can?

A. That is always true.

Q. That is the purport of your last answer?

A. Yes.

Q. Hasn't it been within the purview of your experience that a higher rate of royalty than two cents on an article selling in the market for $19.20 has been paid by some licensees?

A. There is no question about that. Certainly higher royalties have been paid.

Q. And, of course, when you are negotiating for a license on a pioneer patent as a rule you expect to pay more for a license than on a mere improvement? Is that not a fact?

A. Generally the owner of a pioneer patent is able to get a higher royalty than one who has a patent of less scope, although the question of what is a pioneer patent is always open to dispute.

Q. Until after a court has decided?

A. Even then. A court may hold a patent is of pioneer scope in a certain sense. For instance, this patent here we know is not a pioneer patent in the sense of providing windshield or lights for an automobile. The interpretation which I imagine you and the courts have placed on this patent is that it is a pioneer patent in respect to laminated glass. In other words, a particular kind of glass.

[fol. 592] Q. That is my interpretation, and as I read this decision that is the Court's interpretation and what it meant by declaring it to be a pioneer patent.

A. Yes.

Q. Now, in the hypothetical question you have assumed that the process was not fully developed, as stated in Item 9 of the hypothetical question?

A. That section of the question largely influenced the first portion of my answer when I said I thought the chances involved in the manufacture of this glass were such that the patentee should have been willing to have accepted from his prospective licensee a portion of the profits which would have been derived from the business of the licensee.

Q. And, of course, that section was also included in your answer that a half of a cent was a reasonable royalty?

A. No, I don't think that section was included in that answer.

Q. Even if the process were fully developed, you would still adhere to your conclusions that a reasonable royalty would be one-half cent per square foot?

A. Not more than one-half cent.

Q. Now, of course, you stated in answer to the hypothetical question that your conclusion was also based on your feeling that a patentee ought to take a percentage of the profits. Am I correct in that interpretation of your answer?

A. Well, I said under the circumstances which existed here it predicated the strong possibility that the licensee was engaging upon a business which might involve losses and not profits; that the patentee should have been willing to gamble with the prospective licensee.

Q. On that theory, of course, if the licensee kept his prices up, why the owner of the patent would get a greater royalty because the profits would be greater?

[fol. 593] A. He might or he might not. If he kept his prices up, he might not get nearly as much business and might make less profit.

Q. I mean per unit his rate of royalty would be higher.

A. If he got the same volume of business, obviously he would.

Q. And, of course, if you base your royalty on the percentage of the profits, the patent owner then is always in the power of the licensee to the extent at least that the licensee can always reduce the price and thereby reduce the royalty rate?

A. Quite true. Any such reduction of course would be at his own risk.

Q. And in spite of that you still would advise a client that he ought to base his royalty on profits?

A. Yes, that is done quite frequently.

Q. If you were advising a patent owner, you would tell him that he ought to base his royalty on the profits obtained by the licensee rather than on a percentage of the selling price?

A. I wouldn't always do that. And, of course, if I were representing the patentee, I would try to obtain for the patentee the best possible terms I could, and if I could insure him an income under his patent, I certainly would attempt to do so. On the other hand, with the circumstances which existed here, I think a fairer arrangement to both parties would have been a profit-sharing arrangement.

Q. And you would still be of that same opinion even if the licensee at the time he was making the license agreement declared his willingness to go out and sell this article without any profit?

A. Why, no. If he declared his willingness to go out and sell it without any profit, I certainly would not advise the patentee to take a portion of something which was nothing.

[fol. 594] Q. I think it in view of your last answer if you were advising a patent owner and you arrived at the conclusion that a fair basis of royalty would be a percentage of the profits, you would also advise him to put in a clause in the license agreement that the licensee might not sell at less than a certain price, would you not?

A. I would attempt to secure some such statement in the license agreement, but I would hardly expect to be able to be successful in having it accepted by the licensee.

Q. Is that an unusual provision for license agreements in your experience?

A. Yes. Usually the patentee considers that the licensee is not going to intentionally lose money and his intention in engaging in the business is to make money. If he can make money, then the patentee shares in the profits which the licensee is able to make. If conditions are such that he cannot make money, then neither of them have any profit.

Q. Well, we have a case here where we are assuming that the licensee says, "I don't intend to make any money."

A. I drew no such assumption from the question.

Q. I am asking you now to assume such a situation at the time when you are advising the patent owner to make a license agreement based on profits.

Mr. Smith: Objected to as incompetent, irrelevant and not cross-examination and not warranted by anything in the case. I know of no evidence that there was any intention never to make a profit with this patent.

Mr. O'Shea: I think it is a legitimate question on cross-examination.

Mr. Smith: I submit this question is not a fair interpretation of the testimony of Mr. Higgins or anybody else, and I therefore object.

[fol. 595] The Master: I will sustain the objection.

(Exception noted to plaintiff.)

Q. Mr. Harness, your answer to the hypothetical question is based upon an assumption of a non-exclusive license. Would your conclusion be changed if it were an exclusive license?

A. Yes, of necessity it would.

Q. And what do you think would be a reasonable royalty for this patent for an exclusive license?

A. I don't feel that I have made a sufficient study of the matter to warrant my answering that. A lot of things would have to be considered in connection with an exclusive license. There is no question but what an exclusive license always is worth more to the licensee than a non-exclusive license. How much more depends upon a multitude of circumstances.

Q. Mr. Harness, you said you were attorney for the Ford Motor Company?

A. I am not now; I was.

Q. Were you attorney for the Ford Motor Company on October 17, 1927?

A. No.

Q. Then I assume you are not the attorney who assisted in the preparation of this Triplex-Ford contract?

A. No, I had nothing to do with that.

Q. Do you consider that it was a substantial advantage to the patentee under this Ford contract that the contract obligated the Ford Company to advertise Triplex product?

A. Undoubtedly it was.

Q. Don't you think that was some consideration over and above the twenty cents payable for half the product?

A. I would reasonably expect that to add something to it. It is always to the advantage of any patentee to have a [fol. 596] substantial manufacturer adopt his patented device and advertise it. On the other hand, it is a thing which I don't think any other motor car manufacturer would pay any additional price for. In other words, if another motor car manufacturer wanted a license under this patent, the mere fact the Ford Company had agreed to use the glass and advertise it would not influence them in being willing to pay any more than Ford would pay.

Q. No, but that element in the Ford contract was a substantial consideration over and above the twenty cents that was paid?

A. Obviously, any use and advertisement which anyone may make of a patented product is of value to the patentee.

LLOYD BLACKMORE, a witness produced on behalf of the defendants, having been duly sworn, testified as follows:

Direct examination.

By Mr. Smith:

Q. Mr. Blackmore, have you been present during the testimony of Mr. Harness which has just been terminated?

A. Yes.

Q. And have you heard read to him the hypothetical question?

A. Yes.

Q. And have you before you a copy of that hypothetical question?

A. Yes.

Q. And have you examined that question before you came here to testify?

A. Yes.

[fol. 597] Q. Now, before I ask you to give your answer I would like to ask you this, Mr. Blackmore. Where do you live?

A. Highland Park.

Q. That is this same municipality that Mr. Harness lives in?

A. Yes.

Q. And how long have you lived there?

A. Eleven years.

Q. Are you a member of the Bar?

A. No. I am a registered patent attorney.

Q. And how long have you been a patent attorney?

A. Since 1909.

Q. Have you had considerable experience in that profession?

A. Previous to that I was a member of a firm of attorneys in Canada and had been since 1904, and have been practicing the profession of patent attorney from that day to this.

Q. You mean continuously since 1909 to this time?

A. Yes, sir.

Q. And have you had considerable practice?

A. I had my own office from 1909 to 1914 in Ottawa, Canada. I came here and went into the patent department of the Burroughs Adding Machine Company; was there about less than a year or a year; from there went to the Packard Motor Car Company's patent department; was there for a year and a half, and then went to the Cadillac Motor Car Company; was there about a year and then organized the General Motors patent department in 1917.

Q. Is that the patent department of the well-known automobile concern called the General Motors Corporation?

A. Yes, sir.

Q. And have you had charge of that patent department since 1917?

[fol. 598] A. I have had charge of the department up until four years ago and then we came under a director of both legal and patent sections.

Q. At any rate, you have been in close touch with the patent department of the General Motors Corporation since 1917?

A. Yes, sir.

Q. And have you had experience with the granting and obtaining of patent licenses by that corporation during that period?

A. I have negotiated and prepared the majority of their licenses in this office. That is, the negotiating of it.

Q. You have not only drafted the papers but been connected with the negotiations for the licenses? Is that right?

A. Always.

Q. And have there been many cases of such negotiations for licenses which you have been connected with for this corporation?

A. Well, it varies. Sometimes you will have—I have had three this month. I would estimate the average would run over ten, however, in the year.

Q. Now, I asked you before whether you had heard this hypothetical question which has been put to Mr. Harness and whether you had a written copy of it before you and whether you have examined it before you were called today. Will you please answer the question, Mr. Blackmore?

Mr. O'Shea: Plaintiff objects to the question as the whole is not founded upon the evidence produced in this case, and particularly objects to that section of Item 6 of the hypothetical question reading as follows: "Very little business was obtained in this manner from either company." That objection being based on the ground that there is evidence [fol. 599] in the record to the effect that substantial business was obtained from each of those companies.

Plaintiff objects to Item 7 of the hypothetical question on the ground that this particular item of the hypothetical question does not properly state the terms of the Ford contract referred to in the item in that the term of the license agreement was not limited to the life of the Benedictus patent in suit, No. 1,182,739, but was limited to the life of any patent that was included in that agreement and the agreement includes all inventions, improvements, methods, mixtures and processes covered by any and all Letters Patent of the United States or Dominion of Canada now or at any time hereafter owned, controlled or in the possession of the Triplex Company; and in other respects

Item 7 does not properly nor adequately set forth the terms of the said license agreement.

Plaintiff further objects to Item 8 of the hypothetical question for the reason that it is not founded upon the testimony heretofore adduced in the case and does not properly state that testimony, but assumes a state of facts for the future which might or might not have existed and which could not possibly be in the mind of a person estimating what would be a reasonable royalty in 1928.

Plaintiff further objects to Item 9 of the hypothetical question on the ground that the assumptions in that item are not only not borne out by the testimony heretofore brought out in the record, but are specifically contrary to such testimony already in the record.

Plaintiff objects to Item 10 of the hypothetical question on the ground that it assumes facts which are not within the testimony heretofore adduced in the case, but on the contrary assumes facts which are directly contrary and op-
[fol. 600] posed to such testimony.

Plaintiff objects to Item 11 of the hypothetical question on the ground that it assumes facts which are not brought out in the testimony; on the further ground that the facts assumed in Item 11 are contrary to such facts heretofore brought out in the testimony.

Plaintiff objects to Item 12 of the hypothetical question for the reason that it assumes that the price of ordinary plate glass used in the construction of automobiles is sold at 40 cents a square foot and that ordinary sheet glass, as distinguished from laminated glass or glass used for the production of laminated glass, is sold at a price of six cents a square foot, there being no testimony in the record of those facts. The question further assumes that the average cost of an ordinary plate glass windshield, as distinguished from a laminated glass windshield made of plate glass, is $1.60 and there is no testimony in the record with respect to that cost for an ordinary plate glass windshield.

Plaintiff objects to the last paragraph of Item 13 of the hypothetical question in that it states that the patent owner or assignee, as he is called in the hypothetical question, "reduced these prices in several instances in order to obtain business"; whereas, the testimony heretofore adduced in this case shows that the owner of the patent was forced

to reduce its prices by reason of the competitive prices of this defendant.

The Master: The objections are overruled for the present, and the witness will answer the question, and his answers will be considered in the light of the plaintiff's objections.

(Exception noted to plaintiff.)

[fol. 601] A. In answering the question I have weighed the fact that it was a non-exclusive license; that the glass cost more, and that development work, at least in the nature of production equipment for increased production, would be necessary to have worked out more than it had been; that it was not widely known or sold, at least to the public, and those things very much lowered or tended to lower the value I would place upon the patent. On the other hand, it had possible safety advantages that there was a chance might be found of interest to the public and might in some measure help with the sales of cars. I also realized that the patent only had five years to run. Those two things gave me reason for giving a little more royalty or increasing the figure a little more than I otherwise would. In asking the question, although it is not definitely stated, it says royalty and really your question means royalty on per square foot of glass, I take it, but in any estimating that I could do it would of necessity be based upon per windshield because we think only in terms of automobiles and cars. I do not know nor profess to know anything of the possible value of this glass for goggles or anything of that kind. The glass that you refer to in the question I take it to be automobile windshield glass, and then coming to how much per square foot, it is an arbitrary question always. It is a matter largely of horse-trading, in negotiating a license. It depends upon how much it is wanted, and very often more on wanting it due to meeting competition or to have something that will compete with a competitor than it is with the idea of simply putting on some new device. We have plenty of instances—in fact, this patent had nearly outlived its life before it was taken up. It is something that has been a moot question by eminent counsel and experts from all over the country as to a reasonable royalty for the value of a patent. For tax purposes, for [fol. 602] instance. And in carrying the matter in connec-

tion with tax purposes to the highest government tribunals it was there decided again it was more or less an arbitrary matter of making a price. In this particular instance one knows perfectly well that with the increased cost of the glass a royalty must be the very lowest amount that will be accepted.

My decision was made with consideration being given to the twenty-cent item that was taken as the profit in connection with the Ford agreement and the fact that Ford had the right to make or purchase one-half his quantity, which actually brought the twenty cents down to ten cents. The ten cents then, even though it was all a profit on the total production, was a much, much lower profit than one would ever take or think of taking on an article costing the price that this laminated glass windshield cost, bearing out to my mind the same policy and principle that in quoting or arranging or arriving at a royalty on something that adds to the cost of an alternative construction or article, then the royalty always is low. If the production was to be as large as the figures given, that would also lower the royalty. If it was something that was built in a Cadillac engine, it might be much higher than it would be if it were something built into a Chevrolet engine, but in the matter of glass, glass is glass. In other words, it is a base article. We don't pay any more for a given quantity of steel that enters into a Cadillac engine than we pay for that same steel if it goes into Chevrolet.

In coming to Ford or Chevrolet production we have royalties that range from—in quantity production I mean—speaking of Chevrolet, we have royalties that range from a tenth of a cent per car, which sounds quite ridiculously low, and more often around one or two cents up to maybe seven cents. It takes a higher priced automobile to carry [fol. 603] anything more. Further, in respect to such royalties, if a high price, in excess of we will say two cents, is to be paid, it is generally a case where it was something where we can change and avoid the royalty if we wish. In negotiating a royalty agreement on this glass, and taking it that that was the only commercial process available at the time, I would argue strongly for a lower royalty because if we put that out and educate the public to its use, we then cannot back up on it; so I would expect that would continue and we would have to continue with it. We

couldn't retract our advertising, afford to look that foolish in the eyes of the buying public. On the other hand, as I repeated, it was only five years for the patent to run. The arbitrary figure then in my opinion, without knowing Mr. Harness's thoughts in the matter, came to I would say two cents at the most for a windshield and that would be lowered if we put it around the car, meaning that if we paid two cents for a windshield, we would feature the windshield as being the part if broken the safety features of the glass would be much more important than it would if a side light or window is broken, which is much less liable to occur unless it is a total wreck. We would get the advertising from the front windshield more in proportion than we would if we paid the extra money and placed it all around the car. If it went all around the car, I would say at the most I would double it—four cents. I would try and get it for three cents, which would mean the whole car for three cents. I could have under those circumstances no regard for the price of the article, a[illegible]n't but say that those are the prices and that is what is a range of prices that is being paid regularly, having been built largely on the experience of what was found to be satisfactory to persons having patents that went into a product having a production of a present-day automobile, especially in the Chevrolet line. Time was when royalties went higher, say twenty-five cents for [fol. 604] a group of controlling patents such as a transmission or a rear axle where the differential was new in the mechanically driven automobile, but those figures—the production was found to be so great that they were recognized as too much and as the production went up rebates were made. I would therefore state that two cents, and if a person wanted it, it would be their business if they choose to pay three or five or even up to seven for a Buick class car, but when it comes into the Chevrolet production or the Ford production, I would say that two cents is the limit.

Q. Now, as I understand it, you say two cents would be the limit for the windshield?

A. Yes, sir.

Q. And assuming that the windshield comprised about four square feet of laminated glass, that would make your outside royalty one-half cent a square foot. Is that your testimony?

A. Yes, sir.

Q. But if you were applying that royalty not only to the windshield but to all the glass in the car, I understand you to say the royalty should be less than one-half cent per square foot when applied to all the glass.

A. I would say so.

Q. Now, Mr. Blackmore, you must understand in your testimony that this glass may be used not only for windshields but also for the other lights in the car. Did you so understand?

A. Yes, sir.

Q. And you are testifying considering that fact?

A. I am.

Cross-examination.

By Mr. O'Shea:

Q. Well, as I understand your testimony, Mr. Blackmore, it is your opinion that if you are granting a license [fol. 605] to a licensee whom you believe is in all possibility going to have extremely large production, then the royalty would be low?

A. Yes.

Q. Would you consider the Ford Company a company whom you would anticipate would have a large production, particularly if you were giving the matter consideration in 1927?

A. Yes.

Q. Conversely, if you were dealing with a manufacturer who would have relatively low production, you would increase that royalty proportionately? Is that correct?

A. Only because, and understand me, I speak of lower production because it always comes into a higher class car, which enables you to pay more.

Q. That is the reason why the manufacturer would have the lower production, is it not, because his price is higher?

A. That is more correctly put. It is not the mere low production because that in itself is wrong, and we not only consider in fixing a royalty the matter of production but we also consider the matter of price. I explained further that in this matter of glass it was rather unfortunate that it had to take a base price, and in getting to the Ford production you wouldn't say because this piece of glass which

you are buying from me—we would have to pay you many times more because it is going into a Chevrolet car.

Q. Why not, if your theory that a low production and high price ought to result in a high royalty is correct?

A. I mentioned that a Cadillac motor costs many times more than a Chevrolet motor would cost. That is not true of the glass.

Q. It is true to the extent that in the large production on the low price car they were using sheet glass; whereas, in [fol. 606] the high price car they had to use a better quality of glass, namely, the plate glass which costs more.

A. Yes, you could make a difference between the two.

Q. There would be a differentiation in your estimation?

A. Yes, if the higher priced plate glass was used in the Cadillac and the sheet glass was used in the Ford or Chevrolet, why you could add more to the Cadillac in the way of royalty. And in that respect I will go further: you could add anything that the traffic, as we say, would bear. It is entirely a matter of horse trading and negotiation. If the price put on it is too much, why it simply isn't taken. Usually, however, it will run where if an article was two cents for Chevrolet, it would be ten cents, maybe fifteen cents for Cadillac; a range in between there for the other cars.

Q. Giving your conclusion of two cents for a windshield on a production such as Ford's production, you realize that that amounts to about one-tenth of one per cent. of the patent owner's selling price?

A. No, sir.

Q. You think it is more than one-tenth of one per cent. of the patent owner's selling price?

A. That did not enter into my calculations.

Q. You didn't give any consideration as to percentages?

A. No, I didn't.

Q. If you were advising a patent owner in a situation where his patent only had five years to run, wouldn't you expect him and advise him to try to get a higher percentage of royalty because of the short time his patent had to run?

A. You are on the horns of a dilemma in such a situation. If you ask too much royalty, people are liable to wait for [fol. 607] the little time the patent has to run and leave it free for them to use without payment of royalty. So although a man is more likely to get a little more royalty because the person taking the license will know they are

going to be free of it before, we will say, five years in this case, you wouldn't attempt to crowd it too much or you would spoil it.

Q. Now, as I understand, you base your conclusion on the fact that this laminated glass was not widely known or sold to the public. Am I correct in that remembrance of your testimony?

A. Not that I based my opinion on that, but that that was one item that colored my decision in that it is a difficult thing to start in, as we say, and educate the public. If the thing was a thing that had been received by the public, it would have been different, and after it is received it is different. There were two things. One thing about the glass was that we didn't want to mention the thought of broken glass and the hazards of broken glass, and it would take careful handling to talk about glass being broken and still make the person want to buy this shatter-proof glass. It is better not to have the thought there at all.

Q. Do I understand from your last answer that it is your thought that the attitude of the big manufacturers was that they didn't want to push this for fear it might hurt their sales of cars with non-shatterable glass?

A. No. The trouble was to advertise it, we will say, or get it before the public in the right way without probably reducing your sales because of the thought of broken glass being anywhere.

Q. Well, of course, your advertising now would include the fact that you couldn't be hurt by this non-shatterable glass, and of course that would carry the——

[fol. 608] A. That would be the advertising matter. On the other hand, it was a case of proving it. I know it took me a long time before I felt I would be safe behind shatter-proof glass.

Q. In other words, your thought is that the manufacturer might be afraid that the public would become conscious of the danger from shattering glass?

A. Yes.

Q. Now, on this question of this glass being widely known, I direct your attention to the fifth item where it is stated that the patent owner here spent approximately $250,000 for the purpose of creating a public interest. Wouldn't you think some public interest should have been created after the expenditure of such an amount as that?

A. Some; but that is a very small amount in the kind of advertising—educational work that is necessary to be done with the public today.

Q. Mr. Fisher has testified that even back in 1927 individual owners of cars, prospective purchasers of cars, were asking that their cars to be equipped with non-shatterable glass. Wouldn't you think that was some indication of a demand on the part of the public for this kind of glass?

A. Some demand but not necessarily a demand, meaning by that that there are two things. The public will always take anything that is put on the car if it doesn't cost them any more; if they think they are getting it for nothing in other words. You can hang anything and everything on and they will be glad. And also there are always a number of people who will buy what you know as a custom built car and will buy odd articles or odd accessories to put on their car; while the ordinary person much prefers to carry along on the standard equipment.

Q. Wouldn't you consider that there was a public demand for an article where the manufacturers of that article were [fol. 609] disposing of a total of two million square feet of it in a year?

A. On the part of whom? You said a demand.

Q. On the part of the public.

A. Not necessarily. If one manufacturer chooses to put that in his automobile and that doesn't double or treble his sales, I don't see an indication of a demand on the part of the public.

Q. Well, is it any indication that the public does not want it?

A. No, not at all.

Q. Now, you are quite familiar with the arrangements internally of the General Motors Corporation, as I understand from your direct testimony?

A. In what connection?

Q. Patent matters and business matters.

A. Yes.

Q. Are you familiar with the fact that the General Motors organization signed a contract with the Fisher Body Company to pay them for their bodies cost plus 17½ per cent.?

Mr. Smith: Objected to as incompetent, irrelevant and not proper cross-examination.

The Master: What is your purpose, Mr. O'Shea?

Mr. O'Shea: This gentleman testified he was familiar with internal facts of the General Motors Corporation and qualified himself primarily on General Motors.

Mr. Smith: That is not a patent question.

The Witness: No. That would be entirely a sales matter.

The Master: We will hear the witness's answer and determine later.

(Exception noted to defendants.)

[fol. 610] The Witness: I meant that as my answer.

Q. You mean no, you are not familiar?

A. I am not familiar.

Q. Are you familiar with the suit of the General Motors Company under the Munger demountable rim patent?

A. No, sir.

Q. You don't know what the General Motors had to pay as a reasonable royalty under that patent?

A. That was before my time.

Q. Have you any specific contracts for royalty in mind where the patent owner received a percentage of the selling price of the article?

A. No, sir.

Q. You never drew such a contract as that?

A. No, sir.

Q. They were always based on the profits?

A. No, they were based on the article. So much per car as a rule. When I say that I wouldn't say there wasn't one odd contract not drawn on those lines.

Q. But you never drew a license agreement for the General Motors where the royalty was based on selling price?

A. No, sir.

Q. And you draw on an average of ten a year?

A. Yes, sir.

Q. Are all of the General Motors contracts drawn by you or only such as are negotiated here in Detroit?

A. At one time they were all drawn by me; at least all that were negotiated here in Detroit. Now they are drawn by myself and also others—Mr. Spencer and on odd occasions maybe someone else on our staff.

Q. Would your conclusion as to reasonable royalty under this patent be changed if the hypothetical question had not [fol. 611] stated that this process was not fully developed?

A. No. That didn't influence me nor did I give it much concern because always with such matters when it comes to big production we have got to regularly provide equipment that is different from equipment that someone may be using on small production elsewhere.

Q. Mr. Blackmore, I don't know whether you were asked this question. Did you read and do you understand the Benedictus patent in suit, No. 1,182,739?

A. Yes, sir.

Q. Did you read Judge Schoonmaker's decision?

A. No, sir.

Q. Have you read the decision of the Circuit Court of Appeals of the Third Circuit on that patent?

A. No, sir.

Q. So that you gave those opinions, and particularly the scope and advantages and utility of this patent, no consideration?

A. Yes, I took this question and took it as it stated in the question, and that patent and that claim in particular was shown to me, and that was the scope of the protection and further, not only that that was the scope of the protection, but that there was no other alternative construction that was available.

Q. In your answer to the hypothetical question did you have in mind basing it on your experience with licensing of articles of the General Motors Company where they were making it themselves?

A. Yes.

Q. In the conclusion that you arrived at in answer to the hypothetical question, did you take into consideration that the patent owner in this case was directly in the business and that the royalty which you are testifying about was to be paid by a competitor of the patent owner?

[fol. 612] A. No, sir.

Q. You did not take that into consideration?

A. No, sir.

Q. Do you know what royalty the General Motors Company paid on the Lovejoy Shock Absorber patent?

A. I have seen that license. I was the man who first contacted with Mr. Lovejoy. I know it to be very, very low. However, that matter was finally consummated at our Dayton office. I can't remember now when you ask me to remember. We have a long list of those figures.

Q. I asked you did you remember what the royalty was that was paid under that patent.

A. No.

Q. Now, do I understand you to say that it is your opinion that a reasonable royalty here would be at the rate of four cents a car for a complete equipment of this non-shatterable glass?

A. I said two cents a windshield and I said four cents a car maybe five, as I recall it.

Q. And if there were a million cars produced in the year, that would amount to $50,000?

A. Yes, sir.

Q. And you would consider——

A. That is a non-exclusive license.

Q. That is a non-exclusive license, but all of the licensees would produce only a million cars a year is my assumption.

A. I am talking about what we would be paying him if we took a license.

Q. Let us assume that they would have to make the same——

A. If Chevrolet took a license.

Q. —the same royalty on other cars, too—all other manufacturers' cars.

A. Yes.

[fol. 613] Q. And the production in a year of all of them amounted to a million cars.

A. But it is more than that.

Q. I am assuming if it were. It may be more than that, but I am assuming the total production was a million. That would be $50,000 for a million cars that he would receive?

A. Yes, sir.

Q. And you would think that would be a proper compensation to a patent owner who had already gone out and expended more than a quarter of a million dollars to create the demand?

A. Not at all.

Q. You think it would not be a reasonable royalty?

A. It may or may not be. I would think it was a reasonable amount for us to pay him on only Chevrolet production, which is the figure you quoted.

Q. On the higher price cars you think that ought to go up?

A. If they use the better quality of glass, I would consider it unfortunate for the inventor that he couldn't tack

onto the higher priced car, a proper, proportionately higher, amount.

Redirect examination.

By Mr. Smith:

Q. When you speak of two cents for the windshield and four or five cents for the car, am I right in assuming the four or five cents applied to a case where not only the windshields but all the body lights were of the glass?

A. Yes, all the body lights.

Q. In this seventh division of the hypothetical question reference is made to this Ford contract. Now, supposing a manufacturer of laminated glass was to be paid all his costs, total costs, and in addition twenty cents a windshield, [fol. 614] could or could not he count that whole twenty cents as being royalty?

A. Well, obviously not.

Q. Why not?

A. Well, where royalty is paid the man receiving it as a rule, and at least in full respect to what he receives the royalty on—he has no investment at stake nor is he taking any chances on the trend of the market or obsolescence of the article or some unforeseen competitive article coming into the field. Therefore, twenty cents would be very largely profit.

Q. Is it necessary or is it not necessary for a manufacturer to have good profits in good years to offset the lean years in business?

A. That of course is what has set up what we all know as the well known reserves.

Q. Now, do you consider that your testimony fixing the royalty at half a cent a foot or two cents per windshield is at all in conflict with this twenty cent agreement in the Ford contract referred to in paragraph 7 of the question?

Mr. O'Shea: Objected to as calling for a conclusion. The fact speaks for itself.

The Master: Objection overruled. Exception noted.

A. No, not at all.

(Adjournment taken until 11 A. M., Thursday, April 14, 1932, at the offices of the Chrysler Motors Corporation.)

[fol. 615] Thursday, April 14, 1932.

Met pursuant to adjournment.

Counsel present as before.

A. C. DOWNEY, a witness produced on behalf of the defendants, having been duly sworn, testified as follows:

Direct examination.

By Mr. Smith:

Q. Colonel Downey, where do you live?

A. Detroit; 950 Atkinson Avenue.

Q. About how long have you lived in Detroit?

A. Since February 1, 1921.

Q. Have you any connection with the Chrysler Motors Corporation, whatever the proper name of the Chrysler Company is?

A. Yes, sir. I am president of the Fargo Corporation, which is one subsidiary, and vice-president of the Dodge Corporation, another subsidiary.

Q. This Fargo Motor Corporation of which you are president, what kind of a company is that? Is it a manufacturing or a selling company?

A. That is a selling organization. We have charge of selling Chrysler cars, Dodge cars, De Soto cars, Plymouth cars, Dodge trucks, Fargo Motor Coaches to all national fleet accounts and to all users of twenty-five or more vehicles in the United States.

Q. When you say "national fleet accounts" you mean by that people who buy or use fleets of automobiles?

A. Yes, sir; fleets of automobiles, such as United States Steel, National Biscuit, and people of that kind.

[fol. 616] Q. And this Fargo Motor Corporation acts in that capacity with respect to the entire Chrysler line of cars, does it?

A. Yes, sir.

Q. Now, you are also vice-president of the Dodge Brothers Corporation. Are you anything else besides vice-president?

A. Assistant general manager.

Q. That is the Dodge Brothers Corporation?

A. Yes, sir.

Q. What kind of a company is that?

A. That is an operating company producing Dodge Six's, Dodge Eights, Dodge taxicabs, Dodge trucks; also miscellaneous parts for other Chrysler Motors vehicles.

Q. Colonel Downey, can you give us the names of the three large automobile companies in the United States?

A. General Motors, Ford, Chrysler are the three largest.

Q. How long have you been president of the Fargo Motor Corporation?

A. About one year.

Q. And how long have you been connected with the Dodge Brothers Corporation as either vice-president or assistant general manager?

A. Two years.

Q. Were you ever at any time connected with the purchasing department of the Chrysler Motors Corporation?

A. I was director of purchases from the beginning of the Chrysler Corporation until two years ago.

Q. About when was the beginning of the Chrysler Corporation?

A. About 1924 was the legal beginning of the Chrysler Corporation. Mr. Chrysler operated Maxwell and Chalmers from 1921 on.

[fol. 617] Q. As director of purchases were you or were you not the head of the purchasing department of the corporation?

A. Yes, sir.

Q. And as such you had supervision over the matter of all purchases?

A. Yes, sir.

Q. Take the Chrysler five to seven passenger closed automobile. Would you tell us approximately how many square feet of glass are in the car, including the windshield and body lights?

A. Well, there is about eighteen to twenty feet in the average sedan body, and about four to five feet in the average windshield.

Q. That would make it somewhere from twenty-two to twenty-five feet of glass throughout, approximately?

A. Yes, sir.

Q. Do any of the Chrysler cars have laminated glass as standard equipment at the present time?

A. The Imperial Chrysler has it as standard equipment.

Q. Is that throughout as well as in the windshield in that particular model?

A. Throughout; yes, sir.

Q. And is your Imperial your highest priced car?

A. Yes, sir.

Q. About what is the selling price of that car?

A. It depends on the body models; runs from around 2500 to 4500 dollars.

Q. Now, as I understand it, with the exception of that single model, at the present time you don't have laminated glass as standard equipment even in the windshield of any other Chrysler car.

A. That is right.

Q. And when did you first put the laminated glass as standard equipment throughout in the Imperial car?

[fol. 618] A. We put it in the original six-cylinder Chrysler Imperial about 1929, and with the introduction of the first eight-cylinder Imperial we eliminated it, and then with the introduction of the latest Imperial car of this year we put it back.

Q. When did you introduce the eight-cylinder Imperial—about?

A. Two years ago.

Q. So it was standard beginning in 1929——

A. Standard for one year only.

Q. In the model that immediately preceded the Imperial Eight. Is that right?

A. That is my recollection.

Q. Why did you discontinue it at the end of that time?

A. Our management felt that it was not of sufficient importance to justify the cost.

Q. A moment ago when I said that I understood that with the exception of this Imperial, where the safety glass is used throughout, that you didn't use it in any other Chrysler car, I meant to include everything—the Plymouth and all the other cars that are sold by the Chrysler. You understand that, do you?

A. We couldn't use it in the Plymouth.

Q. You don't use it in the Plymouth?

A. No, sir.

Q. Or any of the other models?

A. No, sir. That is, as standard equipment. We use it as optional equipment and get paid for it.

Q. If anybody wants to use it and will pay for it, you let them pay for it? Is that the idea?

A. Yes, sir, except we are trying to force it now and endeavoring to ship it wherever possible as optional equipment.

Q. But optional equipment means equipment where the customer pays extra for it? Is that right?

A. Yes, sir.

[fol. 619] Q. Did you ever use laminated glass in a Chrysler phæton—any part of it?

A. We put laminated glass in Chrysler windshields only, and obviously would have had it in a phæton at that time. I don't recall what year it was.

Q. What kind of a car was a phæton?

A. A phæton is an open car.

Q. So the safety glass used in a phæton would be used in what parts?

A. Well, it would be used in the windshield only unless it was a sport phæton that had a windshield in front of the rear seat; in which event it might be used there.

Q. At any rate, excepting on windshields in the front and excepting such cases where there were two windshields, where they had one in the back seat, there would be no other use of laminated glass in a phæton?

A. No, sir. Phæton was just a high-sounding name for a touring car.

Q. Colonel Downey, will you state whether or not at any time, from say the beginning of 1928 up to the present time, there has been any substantial public demand for laminated glass in automobiles?

A. I wouldn't say there has been.

Q. Well, is it your judgment that there has been or has not been?

A. Immediately after Ford came out with laminated glass in the windshield of his Model A automobile producers were worried for fear there would be a demand for laminated glass, and we all contacted with various manufacturers of laminated glass with the idea of assuring ourselves a source of supply should there be a real demand, and a few months after the Ford car was out we found that there was not a sufficient demand to justify using laminated glass. We haven't found since that time that there was any spontaneous demand for laminated glass which would

[fol. 620] justify the prices that were asked during 1928, 1929, 1930 and 1931.

Q. In round figures about what was the total production of cars of the Chrysler Corporation, including all models, say for 1929, 1930 and 1931?

A. 1929 we produced about 450,000 automobiles; in 1930 around 250,000 or 260,000; 1931 about 270,000 or 280,000.

Q. Take the purchasers of your automobiles. How many drivers in a thousand, let us say, would of themselves ask for safety glass in any part of the car in your opinion?

A. Well, we haven't had any particular demand. It is hard to say per thousand. I wouldn't think there would be more than one a thousand.

Q. Who would ask for it himself?

A. Who would ask for it. The only people who ask for it as a general rule are people who are connected with the automobile industry, who are familiar with its advantages, or customers who have either been in an accident and been cut with glass or whose families have been cut with glass. We find that very generally they ask for laminated glass.

Q. People who have been in accidents?

A. Yes, sir.

Q. Take your own case, Colonel. Do you like to have it in the car you drive?

A. Yes, sir.

Q. Are you a fairly speedy driver?

A. Yes, sir.

Q. Take a production of 450,000 cars. How many spontaneous inquiries from customers would you think you need to show there was a substantial public demand for safety glass on the part of the public?

A. I should think you should get ten per cent of your customers.

[fol. 621] Q. Who would be asking for it themselves?

A. Yes, sir. Of course, in the automobile business that would come through dealers normally rather than direct customers.

Q. Has there been any such demand for this glass?

A. No, sir.

Q. Colonel Downey, I show you the transcript of testimony of Mr. Caulfield in this case on page 279 of the printed record. I want to explain to you about this schedule of prices. This is the schedule of prices submitted by the

Triplex Corporation, and the part that is opposite "W. S. Plate" indicates laminated glass made out of plate glass, and the one below means made out of sheet glass. The top schedule, of which the first figure in the upper left-hand corner is $3.23, was in effect, as I understand, from January 1, 1928, to July 1, 1928; the lower schedule, which is marked "C", was in effect from July 1, 1928, to June 1, 1930. The columns at the head—the figures indicate the quantities on which these prices are based. For example, the price of windshields, plate, on purchases up to 1000 square feet per day is shown to be $3.23 per square foot, and the same thing on purchases up to 10,000 square feet per day is shown at $2.79 a square foot. Colonel Downey, will you please tell the Master whether or not your company would have considered the purchasing of laminated glass and installing it in your automobiles on that price schedule, even if there had been no competitor whatever, if you either had to buy it from Triplex or couldn't get it at all?

A. It is my opinion that we would not have used any laminated glass at those prices as standard equipment.

Q. Why?

A. It was not worth it.

[fol. 622] Cross-examination.

By Mr. O'Shea:

Q. Colonel Downey, you did buy some glass from Triplex Safety Glass Company for use on Chrysler cars at these prices set forth on page 279 or higher, did you not?

A. You mean as optional equipment?

Q. For any purpose at all.

A. I don't believe we bought any at this price as standard equipment. It is my impression if we bought any at this price, it was optional equipment.

Q. That is your best recollection?

A. Yes, sir. I think the record will indicate that.

Q. In 1929 didn't you adopt laminated glass on No. 80 Model, Chrysler Sedan?

A. Yes, sir. That is the one I referred to in my direct testimony. We adopted laminated glass as standard equipment on the last six cylinder, Model 80, that we built and we left it off of the succeeding eight cylinder models until this year.

Q. And the glass that you used in that No. 80 model was purchased from the Triplex Company was it not?

A. That is not my recollection; no, sir. I don't recall, in fact, having purchased any considerable quantity of laminated glass for standard equipment from the Triplex Company for any model. I went on record that their price was too high, not justified, and we couldn't get to any agreement.

Q. The 10,000 square feet per day price was $2.20 by the Triplex Company, as shown on Table "B" at page 279.

A. That is what we would call a telephone number in purchasing parlance because there wouldn't be any chance to use that quantity in jobs that would justify laminated glass.

[fol. 623] Q. The fact is, however, you paid $2 to the Duplate Corporation per square foot for your glass in March, 1929. Isn't that the fact?

A. Yes, sir, I think so.

Q. So the differential between $2 and $2.20 is what made it an impossibility to purchase the Triplex glass? Is that what we are to understand?

A. I don't see any $2.20 figure. The only $2.20 I see is 10,000 feet per day. We couldn't use that. That was a very small production model, averaged probably less than ten vehicles per day. We would be in the $2.66 bracket.

Q. The fact is that in March, 1929, you used 29,678 square feet on the Chrysler car?

A. You may have shipped that quantity.

Q. That was purchased from the Duplate Company.

A. They may have shipped that quantity, but I doubt whether it was used at that time.

Q. Well, that was a substantial quantity you would say, would you not?

A. Way in excess of our normal use.

Q. Of course, you wouldn't know what demand was being made by the purchasing public through the laminated glass producers' distributors, would you?

A. Well, as a matter of general information, everybody engaged in laminated glass at that time usually approached both engineers and purchasing departments and advised them of all the people who by any chance did use it or might want to use it.

Q. But you wouldn't carry in your mind how many of those might ask for laminated glass?

A. No, sir.

Q. In these early days of 1927, 1928, 1929, and when I say early days I am referring to the early days in the laminated glass industry, is it not a fact most of the demand came through the distributors since the manufacturers didn't have it as standard equipment?

[fol. 624] A. There may have been a large demand, but if so I was not aware of it.

Q. You wouldn't be apt to know the details of such a demand as that?

A. No, sir.

Q. Now, if a manufacturer of laminated glass in any particular year was selling something over 2,136,000 square feet of laminated glass, would you consider that that constituted a demand for that character of glass?

A. Not upon that statement of facts alone; no, sir. I assume that you refer to the Ford windshield glass?

Q. I am referring to all laminated glass, whether it be used in Fords or any other car, for sheet glass or plate glass.

A. It is my belief that that quantity was largely *the* Ford windshield glass.

Q. That is the fact. But you still would say that such a quantity would not constitute some evidence of a demand on the part of the public?

A. I would say that that quantity, or half of that quantity rather, used by Chrysler, Nash, Buick, and cars of that class throughout the body would constitute a demand. It is my firm conviction that the Ford quantity and the Ford glass not only did not create a demand for laminated glass but was a distinct detriment to laminated glass.

Q. Well, then, as I understand it, if laminated glass was being sold by one of the manufacturers to the extent of over two million square feet of glass to people other than the Ford for Ford production, you would consider that that would constitute a substantial demand for laminated glass?

A. Yes, I think that is a fairly substantial quantity.

Q. Now, from the very beginning, as I understand it, and when I say beginning I mean during the years '27, '28,

[fol. 625] you always did advertise and carry laminated glass as the optional equipment for any one who wished it?

A. Yes, sir.

Q. That is your direct testimony?

A. Yes, sir.

Q. Colonel Downey, do you recall that in the year 1928 the State of Massachusetts passed some legislation with respect to the requirement of using laminated glass in automobiles that were used for public transportation?

A. I recall that one state had some such legislation.

Q. Do you recall about when that was?

A. No.

Q. Do you remember whether it was '28 or '27?

A. It was in the early days.

Q. Wouldn't you say that such legislation as that was some indication of a demand on the part of the purchasing public for the use of this glass?

A. I would not.

Q. Do you recall whether or not an ordinance was passed in the City of New York with respect to the same thing? That is to say, the use of laminated glass on public vehicles, taxicabs and the like.

A. There is such an ordinance and in my opinion it was sponsored by manufacturers or a manufacturer of laminated glass.

Q. There is such an ordinance?

A. Yes, sir. In fact, it specifies, I believe, Duplate or equal.

Q. But you wouldn't consider that as any evidence of a demand on the part of the public?

A. No, sir.

Q. Now, in addition to that wasn't there some legislation in the State of Michigan passed some years ago which was to become effective a number of years after the passing of [fol. 626] the legislation, the effective date I think being about around now?

A. Michigan has passed a law which provides for the use of laminated glass in vehicles for hire, effective I believe July 1, 1933, and in all vehicles about one year later.

Q. Is that limited only to vehicles for hire, or does it cover all passenger vehicles?

A. It covers all passenger vehicles about July 1, 1934.

Q. As I understand it, Colonel Downey, in 1929, spring

of 1929, when you began on behalf of the Chrysler Company purchasing laminated glass in substantial quantities from the Duplate Corporation, you were actuated in buying the Duplate glass primarily because of the lower price that company had over the price the Triplex Plate Glass Company was quoting you.

A. We were actuated because of the lower competitive price and also because it put it more nearly in a range where we felt we could afford to put it in a car.

Redirect examination.

By Mr. Smith:

Q. Colonel Downey, you were asked in cross-examination about the sales of laminated glass by a manufacturer somewhere around 2,300,000 square feet a year. As I understood your testimony of the number of square feet throughout in a closed car, that would be the glass complete for about 100,000 automobiles. Is that approximately correct?

A. Yes, sir. It is not my understanding though that that figure is arrived at in that way. That figure represents mostly Ford windshields.

Q. Well, let us assume it does not. Let us assume it represents cars not confined at all to the Ford. Supposing [fol. 627] we excluded the Ford production entirely. You were asked that question, as I understood it, for the year 1929. Leaving the Ford production out of the picture, approximately in round figures how many automobiles were produced in the United States in the year 1929?

A. My recollection is around four million in 1929.

Q. Now, if in those circumstances the sales of this two million three hundred thousand approximately square feet of safety glass had been induced by the efforts of the manufacturers to induce the public to take it, would you or would you not think that that indicated a demand on the part of the public itself to have it?

A. Well, I have already stated in my previous testimony that I didn't think personally that there was any real demand on the part of the public for laminated glass, and the actions of Chrysler Motors in its handling of laminated glass, which is or should be in the record in this case, indicates Mr. Chrysler didn't think there was a real demand for it, or any of the other executives in the corporation;

because if there had been a real demand for it, it certainly would not have been taken out of the highest priced automobile we built in 1930 and 1931, and if there had been a real demand for it, it would have been put in the cheaper priced cars and the Dodge Eight.

Q. And your testimony as to the fact in your opinion there was no public demand, that applies to this illustration of 2,300,000 square feet, does it?

A. I still think there was no demand for laminated glass to justify paying even one-half the price that was asked for it in 1929, regardless of any figures that might be produced as to total sales from either factories or jobbers or as optional equipment.

Q. You were asked about the differential between Duplate laminated glass at $2 and the figure of $2.20, [fol. 628] I believe, for Triplex glass. As I understand it, the $2.20 Triplex figure was based upon purchases of 10,000 square feet per day. Is that your understanding?

A. Yes, sir.

Q. When the Duplate Corporation sold you this glass at $2 a square foot, if that was the price, did they make any requirement you would have to buy 10,000 square feet per day?

A. No, sir.

Q. If you bought a hundred square feet per day, would you get that price?

A. Yes, sir.

Q. Now, you said that you thought the Ford introduction of the laminated plate glass on windshields of the Model A car, which I believe came out late in 1927, this being standard equipment for that windshield—you said you thought that was a detriment to the laminated glass business. Why do you say that, Colonel?

A. I think it is dangerous to have sheet glass in the windshields or doors of any vehicle. That glass was wavy, caused distorted vision, turned yellow. In my opinion the safety features were more than overcome by the detrimental effect of the waves and color.

(Adjournment taken until 2:15 P. M. at the offices of the Hudson Motor Car Company.)

[fol. 629] 2:15 P. M.

Met pursuant to adjournment.

J. E. McLARTY, a witness produced on behalf of the defendants, having been duly sworn, testified as follows:

Direct examination.

By Mr. Smith:

Q. Mr. McLarty, where do you live?
A. Detroit.
Q. And how long have you lived in Detroit?
A. Since 1925.
Q. Are you connected with the Hudson Motor Car Company?
A. Yes, sir.
Q. And what is your position with the company?
A. Service manager.
Q. What does that mean in a few words—service manager?
A. The service department takes care of the supplying of the spare parts and all data contingent on the maintenance of the vehicles after they are built?
Q. You are in charge of that department, are you?
A. That is right.
Q. How long have you held that position?
A. I have been service manager since 1924, but there is one break in that.
Q. What is that?
A. I was made assistant sales manager and left the department for a year and then came back in it again.
Q. During what year were you assistant sales manager?
A. 1929.
[fol. 630] Q. At the present time is safety glass used as standard equipment in any Hudson cars?
A. It is in the windshields of a few of our models.
Q. In how many of your models?
A. I think there are seven.
Q. Are they the most expensive or the cheaper models?
A. The expensive models.
Q. How many Hudson models are there altogether?
A. There are twelve.
Q. In the remaining five, as I understand it, it is not used as standard equipment even in the windshields?
A. No, it is not.
Q. And the only cars it is used as standard equipment is in the windshields of the seven models you first spoke of?

A. That is true.

Q. Is safety glass used as standard equipment in any of your Essex cars?

A. No, sir.

Q. How does the Essex compare in price with the Hudson? I don't mean in dollars, but which is the more expensive?

A. Well, the Hudson is the more expensive.

Q. And I presume in number of units sold in the ordinary year you sell more Essex units than you do Hudson units?

A. That is true.

Q. A considerable number?

A. Yes.

Q. Was safety glass standard equipment even in the windshields of any Hudson model in 1931?

A. No, sir; neither Hudson or Essex.

Q. In 1929 and 1930 was safety glass standard equipment in the windshields of any Hudson?

[fol. 631] A. Yes, safety glass was standard equipment in some Hudson models in 1929.

Q. Was it the more expensive models?

A. The more expensive model.

Q. And were there some of the Hudson models that didn't have it even then?

A. That is true.

Q. Has safety glass ever been standard equipment in the body lights of any of your cars?

A. No, not in body lights.

Q. And I think you did say that in 1931 your company discontinued the use of safety glass in any way in any of your cars?

A. Yes, they were not used in any car in 1931, but were available at additional charge if wanted.

Q. That would be called optional equipment?

A. Optional equipment, yes.

(Papers marked Defendants' Exhibits "M" and "N.")

Q. Mr. McLarty, I show you a copy of a letter marked Exhibit "M," being a copy of a letter dated April 5, 1928, addressed to Hudson Distributors, and, with the typewritten signature at the end as follows: "Hudson Motor Car

Company, J. E. McLarty, Service Manager." Do you recall the sending out of a letter to your distributors of which that was a copy?

A. Yes, I do.

Q. And was that letter sent out on or about April 5, 1928?

A. Yes, sir.

Q. Did you have it sent?

A. Yes, sir.

Q. And is that exhibit in your hand a true copy of it?

A. Yes, sir.

[fol. 632] Q. I show you also a small copy of a poster which is marked Exhibit "N." This poster is in varicolored type and at the top says, "Hudson Essex Super Sixes." Do you recall that poster?

A. Yes, I do.

Q. Will you state whether or not when you sent the letter of April 5, 1928, it was accompanied by a small poster similar to the one you have in your hand?

A. The facsimile of this was attached to each letter.

Q. The facsimile of Exhibit "N"?

A. Yes.

Q. Do you know whether or not larger posters similar in lettering to the small one you have identified were distributed to your dealers at that time?

A. Well, I never saw the larger one but we were informed at the time that there would be a facsimile of the larger poster that would be supplied to the buyers of the glass to advertise it.

Q. Mr. McLarty, who paid for preparing this small poster that we have here?

A. The Triplex Company delivered them to us.

Q. They delivered them to you?

A. Yes.

Q. And then you prepared this letter of April 5, 1928, and sent it out?

A. Yes, mailed it out.

Q. Who paid for the large posters that were given to your dealers?

A. They did.

Q. Who did?

A. The Triplex Company.

Q. You didn't pay out any money for posters?
A. No, sir.

Mr. Smith: Counsel for defendants offer in evidence the letter dated April 5, 1928, Exhibit "M," and the small poster which accompanied it, Exhibit "N," and we would like, [fol. 633] if your Honor will permit, to have these photostated so that we can withdraw the originals and return them to Mr. McLarty.

The Master: All right.

Q. Now, Mr. McLarty, it has been testified in this case already that about December, 1927, the Ford Motor Company brought out their Model A automobile on which, as I understand it, there was furnished a safety glass windshield as standard equipment. Do you recall that circumstance?

A. Yes, I do.

Q. Do you remember whether that had any effect on the automobile manufacturers? Did any discussions arise out of that?

A. Well, in the following spring we were speculating as to what effect that would have on the buying trend.

Q. That is, as to whether the other companies would have to supply safety glass windshields as standard equipment?

A. Ourselves included.

Q. Including your company?

A. Yes.

Q. What conclusion did you reach about that, Mr. McLarty?

A. About this time—April—we considered this would be an opportunity of determining what the trend was in so far as our cars were concerned because we had been approached to include it in our windshield. I understand—I can't state that definitely, but I understand we were approached. That is, the company or the purchasing department were approached to buy this type of glass instead of plain glass for insertion, but the company didn't see its way clear, or at any rate didn't accept the proposition.

[fol. 634] Q. I see in the first paragraph of this letter dated April 5, 1928, there is a reference to "many inquiries from our distributors as to the possibility of their obtaining safety glass windshields," and so forth.

A. Yes.

Q. Does that paragraph refer to this inquiry that was started by reason of the Ford experiment?

A. That is right.

Q. Did you or did you not receive requests from your distributors or others to supply these safety glass windshields as standard equipment in answer to this letter of April 5, 1928?

A. No, we didn't. I can state that I didn't receive any. You mean that in response to this we received a request to put them in in our production?

Q. Yes, sir.

A. No, we did not, not to my knowledge.

Q. What was your own opinion about it, Mr. McLarty, as to whether the use of the windshields by the Ford Company, in view of this experience you had, made it necessary for your company to adopt them as standard equipment? I mean the safety glass windshields.

A. Well, at that particular time our Essex car was priced within $150 of the Ford car, and being in the lower priced brackets, we naturally were rather watching this proposition, because if it was effective in the sale of Ford automobiles, it might affect our particular market because we were rather close to that group ourselves.

Q. What was your conclusion about it as to whether you had to put it in or not?

A. The conclusion I had at the time was rather a negative one.

Q. Meaning what?

A. Negative that it would be compulsory or even necessary for us to put it on.

[fol. 635] Q. Meaning it would not be compulsory?

A. That is true. Our reaction and our distributors' reaction to it was very negative. Put it this way. In fact, I recall of no distributor ordering any of this glass in any quantity whatsoever. Now, undoubtedly some was ordered, but if I recall rightly, my wording in that letter was in the form of soliciting information from the field to us that we could in turn transmit to this Triplex Company to see if it would be worth while for them to make it or not. In other words, they had to cut certain glass sizes or make a certain set-up to make it, and unless there was some demand for it, our windshield being a different shape from others, that it

wouldn't pay them to go ahead, and that was the tentative arrangement I had with their representative at the time, if I recall, that we would try to sense this market and see what there was to it and transmit that to them; they in turn, if they got enough orders, would proceed to make it.

Q. Now, in this information that was given to your dealers in your letter of April 5, 1928, and by this poster, did that mean that the Hudson Company was supplying this glass or that the Triplex Company was supplying it?

A. The Triplex Company.

Q. And did it mean the Hudson Company was to be paid for it or the Triplex Company?

A. For the glass?

Q. Yes.

A. The Triplex Company.

Q. So if anybody had bought a Hudson car and had desired a Triplex windshield in that, in addition to paying the price of the car he would have had to pay the Triplex Company the price of the windshield?

A. That is true.

[fol. 636] Cross-examination.

By Mr. O'Shea:

Q. Mr. McLarty, how soon after sending out this circular letter and these posters did you go to standard equipment in seven of your cheaper models for the windshield in them?

Mr. Smith: That question is objected to because it is contrary to the testimony. It says "seven of the cheaper models"; whereas, the testimony was seven of the more expensive models.

Q. Did you go to standard equipment on seven of the more expensive rather than the cheaper models?

A. That applies to 1932?

Q. Yes.

A. Seven of our most expensive models have safety glass in standard equipment. That is the current year.

Q. Didn't you have standard equipment on any of the cars for windshields only at any time from 1927 on?

A. Yes, 1929.

Q. And how many cars did you have?

A. That was three models.

Q. Now, how soon after you sent out this letter to your dealers and this poster did you go to standard equipment on the three cheaper models?

A. That would be the three more expensive models.

Q. It was the three more expensive models in 1929 that you went to standard equipment in?

A. That is right.

Q. How soon after did you go to standard equipment on those three models after sending out these two exhibits?

A. That would be seven months. That is April, 1928, and it was introduced in January, 1929. It would be eight months.

[fol. 637] Q. Do you recall when you bought the glass for the standard equipment in those three models?

A. I don't handle that, sir.

Q. It would have been some time, however, prior to the seven months?

A. You see that is handled by another department.

Q. You wouldn't know that?

A. I wouldn't have any data.

Q. Well, as service manager of the Hudson Company didn't you think there was some demand for safety glass on these models when you put it on as standard equipment in your three expensive models?

A. Well, in answering that, the decision as to whether it would be used or not, that didn't rest with me or the service department.

Q. But you as an experienced service man, wouldn't you conclude that since those who had the decision had determined to put it on as standard equipment on three models that they had concluded there was some public demand for it?

A. I think they put it in the three more expensive models to enhance their value. It was one more talking point for an expensive car.

Q. You think this glass would enhance the value and selling possibilities of a car?

A. I do to a limited extent.

Q. Do I understand from your direct testimony that if a customer of a Hudson car went to a dealer and asked for safety glass in his car, that the dealer would refer them to the Triplex Company?

A. No. Let me put it this way. If a customer required Triplex glass in his car, his ability to get it would have been contingent upon whether the dealer or distributor from whom he was buying the car had purchased any of it from them or not. You see none of this glass was installed in this factory or delivered or sold through this factory. It was by direct arrangement between the Triplex [fol. 638] Company and the individual distributor or dealer as the case may be.

Q. Of course, the transaction probably would have been this, wouldn't it: if a purchaser of a Hudson car asked a Hudson dealer to have his car equipped with safety glass, the dealer, if he had the safety glass in stock or if he didn't have it in stock, would order it direct from the Triplex and have it sent to the dealer. Is that the course?

A. Yes, that would be the procedure that would be followed.

Q. You wouldn't have any information as to how many purchasers of Hudson cars did, in this period of 1928 and 1929, ask the dealers to install safety glass, would you?

A. No, I wouldn't know.

Q. Now, from your experience in the automobile business, what yould be your feeling with respect to an article that was being sold by the manufacturer to the extent of 2,300,000 square feet per year, as to whether such amount of sales constituted a demand for it or not?

A. Do you mean a demand from the public or a demand from the man who was buying it? There is a little difference there in my mind.

Q. I had in mind as to whether such an extent of sales as that would not in your opinion constitute some evidence of a demand on the part of the public.

A. Well, I would answer that by saying not necessarily.

Q. If the sales for such glass go up to six million in a year, would you think that constituted some evidence of a public demand for the article?

A. Well, maybe I am rather biased in knowing the particular source to which this glass was going, but I still don't think that indicates a public demand.

[fol. 639] Redirect examination.

By Mr. Smith:

Q. Mr. McLarty, I call your attention to the second paragraph on page 2 of your letter of April 5, 1928, which

starts with the words, "Will you please give this proposition your consideration and advise us," and so forth. Will you state whether or not your letter contained a request to your distributors to advise you as to the requirements for this safety glass?

A. Yes, it did.

Q. And in ordinary course, it there were such requirements, would you get advice to that effect from your distributors?

A. Yes, I would.

Q. Did you receive such advice?

A. That is one thing I can't recall receiving. I think I can honestly say I can't recall receiving any.

Q. If you had received any requests for substantial amounts of this safety glass from your distributors, would you think you would remember it?

A. Well, I would say I should, but I can't recall any demand. If I recall rightly, I was to notify this company if it looked like a demand in sufficient volume to warrant their expenditure, what they planned to expend in going ahead with this program.

Q. Did you give them any such notice?

A. I can't recall giving them any such notice at all and our files of '28 are destroyed.

Q. Your letter files of that year are destroyed?

A. Yes.

Q. How did it happen they were destroyed?

A. We do that automatically. In our department the minor files are kept only twelve months, but the serial letters like this one here are carried for many years.

Q. When you just now pointed and referred to "this", you refer to the letter of April 5, 1928?

[fol. 640] A. Yes. We retain that and so-called service bulletins that are issued from year to year we do retain, but our correspondence otherwise is destroyed after two years, or one year part of it. It all depends on the nature of it.

Recross-examination.

By Mr. O'Shea:

Q. Do you recall, Mr. McLarty, whether there was any understanding between you and representatives of the Tri-

plex Safety Glass Company of North America that after the issuance of this Hudson Motor Car Company letter of April 5, 1928, the salesman of the Triplex Safety Glass Company was to call on your distributors and explain to them the advantages and the utility of this glass?

A. I believe that was true. I think from his location he said he would call on some of the eastern ones in the vicinity of New Jersey there, like New York City and so on, to present his proposition personally to them. I seem to recall that.

(Adjournment taken until further notice.)

Pittsburgh, Pennsylvania,
Wednesday, September 21, 1932.

Met pursuant to adjournment.

Present: G. Dixon Shrum, Esq., the Master; Ambrose L. O'Shea, Esq., of counsel for the plaintiff; Marshall A. Christy, Esq., William Watson Smith, Esq., L. E. Hickman, Esq., counsel for the defendants.

(By Defendant's Counsel): In pursuance of the order of the Master, which appears on page 762 of the type-[fol. 641] written record, and without waiving its exceptions to said order, defendant has produced to be copied into the record at this point a paper entitled "Statement of Cost of Thin Polished Plate Glass for Years 1928, 1929 and first five months 1930."

STATEMENT OF COST

	Year 1928	Year 1929	1st 5 Mos. 1930
Manufacturing and Administration	.15590	.15637	.18569
Allowance for use of Patented Process and Apparatus	.12474	.09907	.09694
Interest on Investment 6%	.02553	.02021	.03482
Federal Income Tax	.02267	.02194	.01395
Loss Cutting	.01548	.01621	.02590
Total Cost per Foot	.34432	.31380	.35730

Mr. O'Shea: Mr. Master, I would like to formally offer certain additional exceptions to the statement of account as filed by the Pittsburgh Plate Glass Company, and ask those be made a part of the record.

ADDITIONAL EXCEPTIONS TO DEFENDANT'S STATEMENT OF ACCOUNT

(Additional exceptions of the plaintiff relating particularly to the statement of Pittsburgh Plate Glass Company of cost of thin polished plate glass in the years 1928, 1929 and the first five months of 1930.)

Twentieth. Plaintiff objects to the statement of account as filed for the reason that it is not in proper form in that it is not verified by any officer of Pittsburgh Plate Glass Company.

Twenty-First. Plaintiff objects to the item on said "Statement of the Cost of Thin Polished Plate Glass for the years 1928, 1929 and the first five months of 1930" en- [fol. 642] titled "Allowance for use of Patented Process and Apparatus" for the reasons:

(1) That such item is not a proper element of cost.

(2) That if said item is intended as a notice of claim on the part of the defendant for an apportionment of profits:

(a) That it is improperly applied in the account as filed.

(b) That as a matter of law the defendant is not entitled to an apportionment of profits in this case since the patent calls for and the infringement consists of a single unitary structure.

(c) That as a matter of law the defendant is not entitled to an apportionment of profits in this case since the entire commercial value of the infringing laminated glass sold by the defendant arose from the patent in suit, and therefore the plaintiff is entitled to recover from the defendant the total profits derived from the manufacture and sale of such infringing laminated glass.

Twenty-Second. Plaintiff objects to the item on said "Statement of the Cost of Thin Polished Plate Glass for the years 1928, 1929 and the first five months of 1930," entitled "Federal Income Tax" for the reasons:

(1) That such item is not a proper element of cost.

(2) That if it is claimed as an allowance due to defendant in diminution of profits, it is improperly computed.

(3) That as a matter of law, the defendant is entitled as an allowance for Federal Income Tax, to only so much of any tax it may have paid on infringing profits as the [fol. 643] total assessment for such tax bears to the amount allowed by the Master (exclusive of tax allowance) with proper safeguards for the protection of the plaintiff in the event that the defendant recovers from the government some part of the tax initially paid by it.

Twenty-Third. Plaintiff objects to the item on said "Statement of the Cost of Thin Polished Plate Glass for the years 1928, 1929 and the first five months of 1930" entitled "Loss Cutting" for the reasons:

(1) That there is no proof in the case that this item pertains to a loss arising from cutting the glass, or otherwise.

(2) That all losses arising from cutting the glass, breakage, or other shrinkage is included in the item entitled "Manufacturing and Administration."

(3) That no figures in substantiation of any such item appear on the books of Pittsburgh Plate Glass Company.

(4) That this item is based on speculation and is computed on mere assumptions, not based on any facts appearing on the books of the company or in the testimony of this accounting, but, on the contrary, is computed on assumptions of facts that are untrue.

(5) That the claim involved in this item is a bald attempt to offset a theoretical loss against actual profits, whereas as a matter of law, the defendant is not entitled to offset any losses, theoretical or actual, against profits.

(6) That the sales used in making the computation of the theoretical loss claimed by this item are not infringing sales.

[fol. 644] (7) That the cost of the glass involved in the computation of the loss claimed by this item is not the true cost of such glass.

Plaintiff reserves the right to file such additional exceptions to the accounts heretofore filed by the respective de-

fendants as it may be advised are necessary and proper in view of the testimony that has heretofore and may hereafter be given in this proceeding.

C. L. McHenry, who has heretofore been sworn as a witness in this case, is produced at request of the plaintiff and testifies as follows:

Direct examination.

By Mr. Christy:

Q. Mr. McHenry, did you compile this statement just copied into the record and do you believe it to be correct?
A. Yes.

By Mr. O'Shea:

Q. Directing your attention, Mr. McHenry, to the item on the "Statement of Cost of Thin Polished Plate Glass for Years 1928, 1929 and 1st Five Months 1930" entitled "Federal Income Tax," will you please state on the record just how you computed that item?

A. This represents the tax paid U. S. Government on the earnings as designated in the report. I have taken the profits on the thin polished plate glass less depreciation, getting the income. On this income I have computed in the year 1928, 12 per cent.; 1929, 11 per cent.; first five months of 1930, 12 per cent., which are the Federal income tax rates.

Q. Now, will you please state the figure that you used as income or profits in your computation, and I assume you computed all the years by the same principle?
[fol. 645] A. Yes.

Q. So let us take 1928 as an example of that principle and confine your answer to 1928.

A. 1928 profit on thin glass as used is $1,361,191.67.

Q. And what was the quantity of glass on which you computed that amount of income, in square footage?

A. I do not have a list of the sales in feet.

Q. You mean you haven't them with you?

A. I don't have them here.

Q. They are available, are they not?
A. Yes, sir.

(Paper handed witness by counsel for plaintiff.)

A. (Continued.) I will use this statement you hand me subject to checking the figures for accuracy. This feetage is 7,206,002.

Q. Can you now state the average selling price of those sales?

A. This price is subject to check of .3512.

Q. Will you now please state the cost figure that you used in making your computation for allowance for income tax?

A. You mean the profit or the cost of the glass sold?

Q. The average cost of the glass sold.

A. I do not have that here. In fact, I did not use the cost except as shown by our books. I used the profit.

Q. Well, in order to find out what the profit is you had to, of course, use the cost?

A. Naturally.

Q. That is what I would like to know—what cost you used in arriving at that profit.

A. The cost would be $1,169,211.32.

[fol. 646] Q. Can you reduce that to unit cost per square foot?

A. $.1623.

Q. Mr. McHenry, will you please state the figures by which you computed that .1623 and your method of computation?

A. The cost is $1,169,211.32; divided by the feet sold of 7,206,002 feet, gives a cost of .1623 cents.

Q. In computing this Federal income tax item you applied the difference between the average selling price and the average cost?

A. We do not use the cost and selling price at the average per foot. We subtract the cost from the sales, which gives us the actual gain.

Q. That amounted, as I understand it, to $1,361,191.67?

A. Yes, sir.

Q. And then, in order to arrive at your figure .02267 as appears on the statement of cost of the thin polished plate glass for the year 1928, which statement is filed in this case, did you divide the total footage sold, to-wit, 7,206,002, into that $1,361,191.67?

A. This figure of 7,206,002 that has been previously stated as sales, subject to verification, now appears to be the amount of production, and our sales in any one year never check with our production.

Q. Mr. McHenry, will you please get from the records of the Pittsburgh Plate Glass Company and produce here such of them as will enable you to testify fully on just how you computed the item entitled "Federal Income Tax" appearing on the statement which the Pittsburgh Plate Glass Company has filed herein, purporting to show their cost of sales?

A. I will.

Q. Will you also produce such books, records and documents as will enable you to testify fully with respect to the item appearing on this statement of cost of thin polished [fol. 647] plate glass for the years 1928, 1929 and first five months of 1930, entitled "Loss Cutting," and stated to be in the year 1928 .01548?

A. I will.

Q. I should like particularly to have you produce Volume 60 of your duplicate statements.

A. Yes.

Q. I assume those will contain the necessary pages to enable you to testify on these two subjects, particularly page 357 of that volume.

A. I will get them.

(Adjournment was taken until 1:30 o'clock P. M.)

1:30 o'clock P. M.

C. L. McHenry resumes the stand.

Direct examination (continued).

By Mr. O'Shea:

Q. Mr. McHenry, are you now able to state the quantity of sales in the year 1928 in square footage of thin polished plate glass?

A. In 1928 the sales were 7,206,002 feet and 5 inches.

Q. Will you now state what the selling price of that footage was?

A. .3512.

Q. That .3512 is the average selling price? Is that correct?

A. It is.

Q. And is the figure which you gave this morning, to-wit, .1623, as the average cost per square foot the figures that you did use in computing your income tax?

A. The figure .1623 was used as cost.

[fol. 648] Q. In computing the income tax?

A. Yes, sir.

Q. Were there any other elements than those you have stated this afternoon that you used in your computation of this Federal income tax?

A. I can think of none.

Q. Well, as a matter of fact, to refresh your recollection, I think you did use some depreciation, did you not, but that is in the .1623. Is that correct?

A. That is right.

Q. Am I correct, then, in stating that in computing your Federal income tax you did not use the item appearing on the statement of costs of thin polished plate glass, etc., and particularly for the year 1928, entitled "Allowance for use of Patented Process and Apparatus, .12474"?

A. Yes, sir, you are correct.

Q. Nor did you use the item appearing on the said statement and entitled "Interest on Investment 6%, .02553"?

A. We did not use that item.

Q. Those two items were not used as elements of cost?

A. No, sir.

Q. Is it also correct to say that you did not use the item on the said statement entitled "Loss Cutting, .01548"?

A. We did not use this as a separate item, although it is reflected in our sales and cost of sales.

Q. That you used in the Federal income tax?

A. Yes, sir.

Q. Well, will you explain just how that is reflected in the figures that you used in your Federal income tax?

A. It is reflected in the sales at the profit shown by these two brackets of glass.

[fol. 649] Q. That is to say, it is reflected in the entire selling price?

A. Selling price and cost.

Q. Well, is it an element of cost in addition to the .1623?

A. Not in addition to that figure because it is included in the profit shown at that point.

Q. And is already reflected in the figure of .1623?

A. Yes, sir.

Q. Mr. McHenry, directing your attention now to this statement of costs of thin polished plate glass for the year 1928, and using that year as a typical year, and calling your further attention to the specific item entitled "Manufacturing and Administration", does that figure include and reflect the manufacturing cutting losses and other shrinkage that took place in the manufacturing operation and process?

A. It does.

Q. And includes all of such cutting, shrinkage, breakage, etc.?

A. It covers the actual shrinkage.

Q. Now, will you please explain the item appearing on this statement of cost of thin polished plate glass entitled "Loss Cutting"?

A. This is a loss due to cutting small pieces or small pieces developed in cutting that are sold at a loss, and in our total sales these losses are reflected but in our accounting with Duplate these losses are not reflected because this cutting loss was due to a greater extent in cutting orders for Duplate, due to their sizes being small or smaller than the average sale; therefore, in our sales to Duplate we have taken the glass sold at the actual selling price but have not considered without this item the loss in making strips and glass 1 to 2 feet 8 that is sold at a loss. Now, to arrive at this loss we tabulated the feetage and money of glass [fol. 650] 1 to 2 feet 8 and strips, which in the year 1928 amounted to 911,129 feet, money $188,095.55, or was sold at an average selling price of .20644. Our cost for that glass, as shown by the accounting filed, up to that point was .32884 or a loss per foot of .12240, making the amount claimed for this item in 1928 of $111,522.19.

Q. To whom were these sales that you included in this item "Loss Cutting" made?

A. They were all sales outside of Duplate Corporation.

Q. They were not glass used in the manufacture of Duplate?

A. Not a foot of it.

Q. Can you state generally whether or not they were sold to other manufacturers who fabricated it into laminated glass?

A. I would say that none of it was sold for laminating. Most of it or a great part of it was sold for small mirrors.

Q. Mirrors of the cheaper variety?

A. Yes.

Q. Now, you say in computing that loss you used a figure of .32884 as cost?

A. Yes.

Q. Just what elements appearing on the statement of cost of thin polished plate glass are included in that cost of .32884?

A. All elements except cutting loss.

Q. That is to say, in making that computation of loss you included the .15590 which is entitled "Manufacturing and Administration Cost", the so-called "Allowance for use of Patented Process and Apparatus", the "Interest on Investment" and the "Federal Income Tax"?

A. Yes, sir.

Q. Now, can you state from your working papers whether or not all of the glass in the 1 ft. to 2 ft. 8 bracket [fol. 651] was sold for more than .15590 in the year 1928?

A. The average selling price, the 1 to 2 ft. 8, of this that I have taken as cutting loss was .2387.

Q. So that all of the glass of those sizes, to-wit, in the 1 to 2 ft. 8 bracket, sold at a selling price higher than your manufacturing costs. Is that correct?

A. Not when you consider your cost to be, as stated on our report, .32884.

Q. That is true, Mr. McHenry, but my question is whether it is not a fact that all of the glass included in this item in the brackets of from one foot to two foot eight inches sold for a higher price than your actual manufacturing and administrative cost as apppears on your books.

A. Yes, it is.

Q. As I understand it, even the average of all the glass included in this item entitled "Loss Cutting"—that is to say, both the glass within the 1 ft. to 2 ft. 8 in. brackets and the so-called strip sizes sold at an average of .20644?

A. That is true.

Q. And isn't it also true that in your income tax you paid a tax and reported an income on all of those sales?

A. It is true.

Q. Did you, for any purpose, in your accounting system take into consideration in determining your profit and loss

any figures which you have used in calculating this item entitled "Loss Cutting" on the statement as filed in this court?

A. No other than are reflected in our cost of sales and sales.

Q. And by that you mean that as this was reflected, either as a profit or loss, that was reflected in your figure of .1623 [fol. 652] which you used for income tax purposes and your figure of .15590 as you use on this statement?

Mr. Smith: We would like to inquire what counsel means by the word "this" in this question. I think the question is not very clear.

Q. What I would like to know, Mr. McHenry, is whether in any of your profit and loss statements over and above what you have taken as your actual manufacturing costs you have charged against costs any such item by way of a loss as you have charged in this statement.

A. We have not.

Mr. O'Shea: I should lie to offer the Schedules "J" in evidence and have them marked as Exhibit 8.

Cross-examination.

By Mr. Christy:

Q. Mr. McHenry, I would like it to appear, if it is a fact, that the various records of the company and the computations which you made in connection with them, as summed up in this "Statement of Cost of Thin Polished Plate Glass for the years 1928, 1929 and the 1st Five Months of 1930", were exhibited and explained by you to a representative of the plaintiff before this statement was offered.

A. It is a fact.

Q. Who was it?

A. Mr. Caulfield and Mr. Downey.

Q. And you endeavored to answer and did answer all questions which they had to put to you in connection with that?

A. I did.

Mr. O'Shea: If your Honor please, for the purpose of saving my rights—I don't know the materiality and I there- [fol. 653] fore object to the materiality and competency of

this testimony if it is intended to take the place of defendant's proof of any of these items.

The Master: We will hear it subject to your objection.

Q. Were the books and records actually shown to these representatives of the plaintiff?

A. They were.

Mr. O'Shea: Same objection.

The Master: Same ruling.

Q. Now, this item of Federal income tax which has been discussed here today, as it appears on this statement, that represents taxes actually paid by the company?

A. Federal income tax actually paid to the Federal Government.

Q. That is, it is not a mere book item? It is actually money paid out?

A. Actual cash.

Q. And the interest on investment, without going into details, will you tell how that was computed and what it includes?

A. It includes value of land, buildings and equipment, factory stocks of materials, finished polished plate glass and cash required to operate the plant, computed at 6 per cent. per annum.

Q. These were actual appraised valuations, were they, as appears on the company's books?

A. They were actual book valuations with the exception of cash required to operate the business, which was arrived at by taking total expenditures for a year, dividing these by twelve months, acquiring the amount per month and including enough for two months' operations.

[fol. 654] Q. That is, operations in the plant where this thin glass was made. Is that correct?

A. Yes, sir.

Q. That might be defined as liquid capital required to carry on the business?

A. Yes. At two months if anything it is very low.

Q. It would ordinarily be reflected, if this plant were the only one operated by the Plate Glass Company, as cash in bank and bills receivable, would it?

A. Yes, sir.

Q. But because this was only one of the company's

plants, you had to take, as you say, the amount requisite to run the plant for two months. Is that it?

A. That is it, and I think it is low as no corporation organized can start out with only enough capital to operate for two months—pay their bills for two months.

Q. Now we come to the item entitled "Allowance for use of Patented Process and Apparatus." Am I correct in saying that you were instructed to compute this item as representing saving in cost of manufacture of plate glass due entirely to the introduction of new methods of manufacturing which this plant was equipped to carry out?

Mr. O'Shea: Objected to as incompetent and immaterial and as calling for a conclusion, as constituting no proof that the amount claimed was an actual saving.

The Master: We will hear the answer subject to the objection.

A. That is true.

Q. Will you please state the way in which you made the computation, the result of which is given on your statement?

A. I took the cost of producing quarter-inch glass at our works at Kokomo, Indiana, and Crystal City, Missouri, for [fol. 655] each year. For the year 1928 our average cost at these two plants was .22657. It cost us at our Creighton plant, where we use the patented appliances, .10183 or a saving per foot of .12474, which is due entirely to the patents that we possess on this manufacturing process.

Q. At both Kokomo and Crystal City, if I understand, the quarter-inch glass which you took as a standard of comparison was manufactured by the old method of casting and rolling a sheet on the table, then annealing and then grinding and polishing. Is that correct?

A. That is correct.

Mr. O'Shea: I have an objection to all of this testimony.

The Master: Very well.

Q. Were those two plants at Kokomo and Crystal City efficient, first-class, commercial plants?

A. They were in as good a condition as could be made by this process. At Kokomo we spent on improvements in the years 1920 to 1923 $5,600,000 to bring this plant up to date. At Crystal City between the years 1925 and 1927 we made

an expenditure of $1,010,000 to put this plant in first-class condition.

Q. Why did you take quarter-inch glass for purposes of comparison instead of one-eighth-inch glass?

A. The works at Kokomo and Crystal City did not produce, during the years 1928, 1929 and 1930, one-eighth-inch glass, as this was all produced at Creighton.

Q. And taking the Creighton Works, where the new process and apparatus were in operation, state whether or not the cost of producing one-eighth and one-quarter-inch glass respectively were even and comparable.

A. The only difference in the cost between one-eighth and one-quarter at Creighton—in the year 1928, one-eighth-inch glass cost .095 labor and material cost; one-quarter-inch [fol. 656] cost .1006; or one-quarter-inch cost .011 more than one-eighth. In the year 1929, one-eighth-inch glass cost .095; one-quarter-inch glass cost .104; or one-quarter-inch glass cost .009 per foot more than one-eighth. The first five months of 1930, one-eighth-inch glass cost .103; one-quarter-inch cost .121; or one-quarter-inch glass cost .018 more than one-eighth-inch glass.

Q. That difference was largely due to difference in amount of raw material, wasn't it?

A. It is due to thickness in rough glass.

Q. So that in point of fact the comparison which you have made shows a difference which is less than if you had attempted to compare the manufacture of one-eighth-inch at Creighton with the manufacture of one-quarter-inch at either of the other plants. Isn't that true?

A. Yes, it is.

Mr. Christy: Of course the Master will understand that we will follow this proof up further with detailed proof in connection with our own defense.

Q. The first item on your statement of cost which was entered on the record this morning is entitled "Manufacturing and Administration." Without giving detailed figures, please give the different departments or operations included in that title.

A. Casting department, grinding and polishing department, wareroom department, order cutting department, depreciation and obsolescence, factory general expense, and general office expense.

By Mr. Smith:

Q. Mr. McHenry, does the Pittsburgh Plate Glass Company keep its books of account in a conservative manner?

A. Very conservative, I would say.

[fol. 657] Q. Now, as I understand the item on this statement that we are considering here that you have offered today, entitled "Manufacturing and Administration," that includes certain cutting losses, does it?

A. It does.

Q. I am laying that aside in what I am asking you about, and I am directing your attention to the item on that statement which is entitled "Loss Cutting." Are the figures which are shown in this statement opposite that item produced from actual figures shown on the books of account of the company?

A. They are produced from our actual sales records.

Q. You have records showing the number of feet of these fragments or small pieces of glass that are developed in cutting out pieces that you are making for customers?

A. Yes.

Q. And your books also show the price that you receive in selling those fragmentary pieces?

A. They do. They are billed the same as any other glass.

Q. As I understood your testimony, you said that the reason this charge was set up in this statement against the Duplate sales was that the Duplate Corporation ordered from your company pieces of glass in sizes for windshields and other body lights which were smaller than your ordinary sales of glass—smaller in size, I mean. Is that correct?

A. That is true.

Q. And I understood you to say that in the cutting of these smaller pieces of glass for Duplate you made an unusual amount of these fragments left over in the cutting process, as compared with the cutting that you would do for the ordinary customer. Is that true?

A. That is true.

[fol. 658] Q. And is that why you have set up this "Loss Cutting" on this statement, which for 1928 is .01548?

A. That is exactly the reason.

Q. Now, I think you testified that your average sales of glass for 1928 were at price of .3512. That is, 35 cents and a fraction per square foot.

A. That is the average price of all sales of thin plate for the year 1928.

Q. Just in that connection, so we can make the comparison, what was the average price of the sales in that year of these fragments of glass which were made in your cutting operation? I mean now not only for Duplate but for everybody.

A. .20644.

Q. So, leaving out the fractions, there was a difference of almost 15 cents a square foot, representing the amount which you received less for the fragmentary glass than for the ordinary glass?

A. Yes, sir. It would be still greater than that because in the average sales for the year of 35 cents the small pieces are included in that.

Q. So as they are sold at a smaller figure, that would make even a greater difference?

A. Yes.

Q. And in determining whether your fragments of glass were sold at a loss, you counted as part of the cost all of the items on this statement we are discussing, beginning with "Manufacturing and Administration" and going down the column to include "Federal Income Tax"?

A. Yes, sir.

Q. Now, you stated that you took the sales of the small glass, which I assume means what I have been describing shortly as the fragmentary glass, pieces running from one foot to two feet eight inches, and also strips. Is that right?

A. That is correct.

[fol. 659] Q. Why did you base any comparison by the use of the sizes one foot to two feet eight inches and what you call the strip glass. Why did you speak of those?

A. Because they are the small, undesirable sizes.

Q. And how did you make the comparison so as to produce this figure of "Loss Cutting, .01548"? Did you use the figures for these sizes we have just described a moment ago?

A. Just these two sizes mentioned, yes.

Q. And how did you determine from your books this figure .01548 as applicable to the Duplate Corporation? Did you apply it to the glass sold to that corporation, or how did you make the application?

A. The amount of feetage and money included under 1 to 2 feet 8 is sales to outside corporations other than Duplate. No sales to Duplate are included in that amount.

Q. They are not included?

A. They are not included in this amount.

Q. Well, I am not clear on how you got the basis for the amount you set up here as against Duplate.

A. On the statement as filed. That is, the cost of all one-eighth-inch glass, including the loss cutting. To determine the cost of glass sold to Duplate, we would say for 1928 .34432, which would assess them only with their proportion of the loss cutting.

Q. So you figured your loss on the sale of this fragmentary glass at an average of .01548?

A. That is our loss for 1928 per foot.

Q. And since you figured it on a per foot basis, then it readily can be applied to actual sales in feet made to the Duplate Corporation?

A. Yes, sir.

Q. I mean there is no difference between that item and any other items making up your cost of 1928 of .34432?

[fol. 660] A. They are all the same.

Q. All made on the foot basis of the cost of making one-eighth-inch plate glass at the Creighton plant in 1928?

A. Yes, sir.

Redirect examination.

By Mr. O'Shea:

Q. Mr. McHenry, is it not a fact that this bracket of from one foot to two feet eight inches is the standard bracket in the glass industry?

A. It is. It is the first bracket.

Q. And is considered as a standard size in the industry?

A. Yes, sir.

Q. Would you then, in view of that fact, call glass of that size a fragmentary size?

A. It is a small, undesirable size.

Q. But would you call it a fragmentary size?

A. A piece of glass one foot square isn't very large.

Q. Well, you haven't answered my question. Won't you please state whether you, in view of your experience in this industry and in view of the fact that the industry adver-

tises that as a standard bracket, would you therefore designate it as a fragmentary size?

A. It is a standard size.

Q. Now, this so-called "Loss Cutting." You say that the basis of that, as I understand it, is taken from your sales record. Is that correct?

A. It is; tabulation of the sales invoices.

Q. But that sales record, of course, did not compute any loss on those sales?

A. It did not, except that the glass sold at the sale price is included in our total sales. The loss is therefore lost in the year's operation as to its identity.

[fol. 661] Q. But this sales record didn't specify a loss, did it?

A. No, indeed.

Q. Nor is there any other record in the Pittsburgh Plate Glass Company's accounting record that specifies particularly any loss of this nature?

A. We do not allocate losses to any size or bracket of glass.

Q. Now, did you originate this formula or method of computing this so-called "Loss Cutting" that appears on this statement?

A. I did.

Q. You did?

A. I did.

Q. Your position in the Pittsburgh Plate Glass Company, as I understand it, is in the accounting department—in charge of the accounting department?

A. I am not in charge of the accounting department. That is under the controller—Mr. M. C. Spahr.

Q. You don't consider yourself as a glass manufacturing expert, do you?

A. I have only had ten years' experience.

Q. In the accounting department?

A. Yes.

Q. But you have had no experience, have you, in the production department?

A. I have had the experience of formulating the accounting instructions for the plate glass and various other factories in our company.

Q. Well, your whole experience in the glass industry has been only with the Pittsburgh Plate Glass Company?

A. In the plate glass industry it has, although I have audited several other glass concerns. For instance, bottle works—concerns making glass bottles.

Q. Well, those glass bottles are made by different apparatuses and different processes than are used in the plate glass industry?

[fol. 662] A. Entirely different.

Q. So your whole experience, so far as plate glass is concerned, has been with the Pittsburgh Plate Glass Company?

A. That is right.

Mr. O'Shea: Plaintiff rests, with a reservation, as I stated this morning, that I intend to put in, by way of brief or otherwise, a calculation which has to be made on these records.

Mr. Christy: We submit to the Master that a general reservation like that just above stated is not satisfactory. The defendant is entitled as a matter of right to a specific statement from the plaintiff as to what sum it seeks to recover by way of profits on this accounting and how that sum is computed. Defendant cannot adequately answer a case which is not stated and which, it is said with all respect, is subject to change and modification according to future exigencies. Defendant cannot anticipate a hazy and uncertain basis of claim and should not be required to do so. It is therefore submitted to the Master that it is entitled to the statement asked for before proceeding with its proof.

The Master: Mr. O'Shea, have you any statement to make in view of Mr. Christy's statement?

Mr. O'Shea: I have no statement to make. As I understand the law of accounting. The issues are raised by an account stated that is brought in by the accounting party and the exceptions of the other party thereto, plus whatever the Master may find in the testimony to justify his conclusions under the law. Those are the issues. It seems to me the issues in this case are much more clearly delin-

[fol. 663] eated than most accountings I have ever had any dealings with. If there is any feeling on the part of the defendant that they are entitled to anything more specific by way of stating I have closed my case than I have said, if they will put the words in my mouth, I may use them. I can't see how I may be more specific than I have been.

Mr. Christy: To make matters a little more specific, I will ask our opponents whether they still propose to rely upon Plaintiff's Exhibits Nos. 9, 9-A and 10, and the testimony of the Witness Sharpe through whom those exhibits were produced?

Mr. O'Shea: In answer to counsel's question, counsel for the plaintiff states that he most emphatically intends to rely upon the Exhibits 9, 9-A and 10 which are in this case, as well as all other exhibits that are in this case, and also intends to rely upon the testimony of Mr. Sharpe and all the other testimony in the case. He further intends to recompute the Exhibits 9, 9-A and 10, applying to those exhibits the cost of glass used by Pittsburgh Plate Glass Company, as shown by their own statements in this case.

Mr. Christy: That is my point, Mr. Master. We are entitled to that recomputation now.

Mr. O'Shea: It is all in the testimony there. It is merely a matter of computation.

Mr. Christy: No, it is not.

(Discussion off the record.)

Mr. O'Shea: If I am now asked what I shall claim as the cost of glass used by the Pittsburgh Plate Glass Company in the manufacture of infringing sales, which I now designate and will refer to as Duplate, I shall claim that as a [fol. 664] matter of law the Master must use the figures appearing on the "Statement of Cost of Thin Polished Plate Glass for the Years 1928, 1929 and 1st Five Months of 1930" as follows: Manufacturing and Administration, year 1928, .15590; plus "Interest on Investment 6%," .02553; making a total of .18143. For the year 1929, the items entitled "Manufacturing and Administration," .15637; plus the item entitled "Interest on Investment 6%," .02021; making a total of .17658. For the first five months of 1930, the items entitled "Manufacturing and Administration," .18569; plus the item entitled "Interest on Investment 6%," .03482; making a total of .22051.

I respectfully submit that all of that statement I have just made is indicated by the accounts as filed and the exceptions which have been filed thereto.

Mr. Christy: Except as corrected by the last above statement, does the plaintiff accept the account originally filed by the defendant in this case?

Mr. O'Shea: I most emphatically do not accept the account as originally filed here.

Mr. Christy: Does the plaintiff still contend that the defendant is not entitled to credit as part of its cost of manufacture the value of the difference, or any part of the difference, between the glass actually purchased and delivered to the factory of the Duplate Corporation and the amount of glass actually embodied in infringing sales of Duplate?

Mr. O'Shea: Except as already stated, the plaintiff's counsel refuses to be further cross-examined on this matter. [fol. 665] Mr. Christy: I submit to the Master I am entitled to an answer to that question.

(Discussion off the record.)

Mr. Christy: In view of the above statements by plaintiff's counsel, defendant's counsel states now that he anticipates that he will be driven ultimately to make what he believes will be well grounded objections to testimony which may hereafter be offered by the plaintiff in rebuttal, whether or not such objections may be classed as purely technical. He regrets to make this statement at this time but sees no alternative to doing so.

The Master: Defendant will proceed with its case.

Mr. Christy: Defendant excepts to the ruling of the Master and gives notice that he will proceed as early tomorrow morning as he can obtain the presence of the witnesses, and for that purpose asks for an adjournment until eleven o'clock A. M.

(Adjournment taken until Thursday, September 22, 1932, at 11 o'clock A. M.)

Pittsburgh, Pennsylvania,
Thursday, September 22, 1932.

Met pursuant to adjournment.

Present: Master and counsel as before.

(At request of defendant's counsel, adjournment was taken to Tuesday, October 4, 1932.)

[fol. 666] Pittsburgh, Pennsylvania,
Tuesday, October 4, 1932.

Met pursuant to adjournment.

Present: Master and counsel as before.

Mr. Smith: Mr. O'Shea, we understand that the plaintiff has gone out of business and is in process of liquidation. Will you concede that to be the fact or do we have to prove that?

Mr. O'Shea: That is not the fact.

Mr. Smith: If the Master please, we desire to call a witness to establish that fact in a preliminary way, preliminary to an application that we intend to make to the Master.

Mr. O'Shea: I don't see the materiality of it.

The Master: We will hear it, Mr. O'Shea, subject to your *sub*jection.

C. L. McHenry, a witness produced on behalf of the defendants, having been previously duly sworn, testified as follows:

Direct examination.

By Mr. Smith:

Q. Mr. McHenry, do you know whether or not the plaintiff in this case has gone out of business?

Mr. O'Shea: Objected to on the ground of being immaterial and irrelevant; also on the ground no basis is laid for this witness's knowledge of any such fact.

[fol. 667] The Master: We will hear his answer subject to your objection.

A. Last year.

Q. 1931?

A. Yes, 1931. The assets were sold to Libby-Owens-Ford Glass Company. I was sent to Clifton to check over the inventory of supplies. Through this agreement we were to buy these supplies from Libby-Owens-Ford.

Q. When you say "we" whom do you mean?

A. The Pittsburgh Plate Glass Company. So that the plant has not operated since that time.

Q. And did the Libby-Owens-Ford acquire all of the assets of the plaintiff in this case except its rights in this suit we are trying?

A. That is my understanding.

Q. Did you discuss with Mr. Caulfield the fact the Triplex Company was out of business?

A. Yes.

Q. And was he present when you were looking over these assets—making an inventory of them?

A. Yes, sir; he was.

Q. The factory is closed?

A. Has been closed since they last operated prior to Libby-Owens-Ford taking it over.

Mr. O'Shea: I wish to renew my objection on the grounds stated to the testimony of this witness, and now move to strike it out.

The Master: We deny the motion and note you an exception.

Cross-examination.

By Mr. O'Shea:

Q. Do I understand that you simply are assuming from some conversations that you have had that all of the assets of this company have been sold?

[fol. 668] Mr. Smith: The witness didn't say all of the assets had been sold. He expressly excepted this patent suit. We are not claiming that was sold.

A. All of the assets were removed. The Triplex Company retained some which were removed or sold which the Libby-Owens would not take.

Q. (Question read.)

A. I did not read the contract but from actual observation the assets have been sold with the exception of the material that Libby-Owens-Ford would not take; for instance, certain glass such as bullet proof and defective glass. To my knowledge all the other property was included in the contract.

Q. To your knowledge?

A. Yes, sir.

Q. And what do you base that knowledge on?

A. The reading of a portion of the contract, or an abstract of a portion of the contract.

Q. You only read a portion of it or an abstract of a portion of it?

A. Yes.

Q. Can you state today as to whether this plaintiff has no assets at all?

A. They have office equipment.

Q. Do you know whether they have got any cash?

Mr. Smith: I am not claiming they sold their cash; that wouldn't be a sale. When I stated "assets" I took in physical assets, such as plant, equipment, supplies—not cash and accounts receivable.

Q. Do I understand that you purchased the plant and equipment which did belong to the Triplex Safety Glass Company from the Libby-Owens Company?

A. That I cannot answer.

Q. You don't know whether you purchased the plant and equipment which previously belonged to the Triplex Safety Glass Company or not?

[fol. 669] A. No.

Q. Do you know whether you purchased the plant?

A. The plant was included in this set-up.

Q. What set-up?

A. For the purchase by Libby-Owens.

Q. And did you buy it from Libby-Owens.

A. No.

Q. Did the Pittsburgh Plate Glass buy from Libby-Owens?

A. This is now carried in an account called "Triplex Company", which handles the dissolution or sale of all of these assets.

Q. Well, is the Pittsburgh Plate Glass Company interested in that Triplex Company?

A. Yes, I think they are.

Q. You only think they are? Don't you know that they are?

A. I can't give you any figures that would say we made purchases.

Q. Well, did you buy any of the stock do you know?

A. We have no Libby-Owens stock.

Q. I am talking about this Triplex Corporation into which entity the assets of the plant and equipment of the old Triplex Safety Glass Company went.

A. I do not recall any entries on the Triplex books. They are kept by another individual and I am not familiar with them.

Q. Do you recall whether there is an entry on the Pittsburgh Plate Glass Company's books as to ownership of stock in the Triplex Company?

A. No, sir.

Q. There is no such entry?

A. I recall none.

Q. Do I understand then, so far as you know from accounts of Pittsburgh Plate Glass Company, Pittsburgh Plate Glass Company has no interest in this Triplex Corporation you speak of?

[fol. 670] A. I would not say they have no interest. They must have some interest or we would not have been called upon to go down and check the inventory.

Q. You think they have some interest?

A. Yes, sir.

Q. You don't know what that interest is?

A. I do not.

Q. Are you able to state today from your own knowledge that the Triplex Safety Glass Company is not a going concern?

A. It is not a going concern, as stated before, as when it was organized.

Q. What do you base that on—your knowledge? Please tell us just what knowledge you base the fact you state on, namely, that the Triplex Safety Glass Company is not a going concern.

A. You refer to the Triplex Company of North America?

Q. Triplex Safety Glass Company of North America.

A. It is not a going concern in the laminated glass business.

Q. You mean by that it is not now selling laminated glass?

A. Not to my knowledge.

Q. Assuming that fact, does it necessarily follow it is not a going concern, do you know?

A. It is not a going concern selling laminated glass. It may be handling cups or some other commodities.

Redirect examination.

By Mr. Smith:

Q. This factory you say was taken over. Was that the factory where this laminated glass was made?

A. It was.

[fol. 671] Q. And the inventory of equipment and supplies and so forth that was taken over. Was that at that plant?

A. It was.

Q. Were you at the plant yourself?

A. I was.

Q. You discussed this question with Mr. Caulfield who is present here—the matter of taking over these inventories?

A. Yes.

MOTION FOR ORDER REQUIRING PLAINTIFF TO PRODUCE CERTAIN BOOKS AND RECORDS

Mr. Smith: We are ready to call one or more witnesses this morning but, before doing so, make the following application to the Master: In the plaintiff's case, plaintiff has offered evidence which it claims shows that the plaintiff was forced to reduce its prices; also that it lost sales of laminated glass which the plaintiff would have made except for the competition of the defendant. Plaintiff also produced evidence to the effect that the Johnston Glass Company took a license under plaintiff's patent. Plaintiff also offered in evidence an agreement dated October 17, 1927, between plaintiff and the Ford Motor Company under which the latter was to pay plaintiff for laminated glass at the cost of production as therein set forth, plus 20 cents for each Ford windshield and a proportionate amount as therein set forth for glass other than windshields. Plaintiff called one Frank L. Dyer and one Francis L. O. Wadsworth as expert witnesses on the subject of a reasonable royalty and propounded hypothetical questions to these witnesses in which it is stated, among other things, that the laminated glass described in the Benedictus patent was largely used in the automobile trade; that there was by the inherent merit of such glass created a rapid and broadening market

[fol. 672] so that the sales of Benedictus non-shatterable glass in the year 1928 amounted to 3,100,000 square feet and that in the year 1929 it amounted to 8,362,000 square feet. In the hypothetical question put to Frank L. Dyer the above-mentioned Ford contract dated October 17, 1927, is specifically mentioned. In answering this question, this witness based his answer upon the allegations contained in the hypothetical question and the witness particularly refers to his assumption that the Triplex Company, by means of advertising, "had created a very substantial demand for laminated glass" and that "the market therefore was an easy one because of this demand." This witness also refers to the value of the said Ford contract and in his answer the witness makes the following statement:

"Under ordinary conditions, a licensee taking a license under a patent, generally receives it from the patent owner, either the inventor or some holding company, and therefore the entire expense and risk of development is imposed upon the licensee. Here all this had ben done by the Triplex Company, and when the Duplate Company entered the field, practically all risk had been elminated and a substantial demand had been created. In other words, a license to the Duplate Company would have been practically an invitation on the part of the Triplex Company to divide the business of the company between them."

Further, in the hypothetical question put by plaintiff to Francis L. O. Wadsworth, in addition to the foregoing matters referred to as being included in the question, it is stated that the plaintiff received in the years 1927 and 1928 from the distributors and automobile and body manufac-[fol. 673] turers for optional equipment a price of $4.80 per square foot for plate laminated glass and $3.60 per square foot for sheet laminated glass until March, 1928, and thereafter $2.40 per square foot for sheet laminated glass and that such customers accepted such prices as fair and paid such prices and the hypothetical question further stated that the plaintiff established and maintained and received from automobile and body manufacturers for standard equipment a schedule of prices which is set forth in detail in the hypothetical question and that some automobile manufacturers accepted and paid such prices as fair prices and purchased laminated glass at such prices. The

witness Wadsworth based his answer upon the allegations contained in the hypothetical question.

In order that the facts in this case may be disclosed, we now respectfully request the Master to order the plaintiff either to produce before the Master or to permit defendants to examine its books and records for the years 1927, 1928, 1929, 1930, 1931 and 1932 with reference to the following matters:

(1) Plaintiff's costs of production of laminated glass, including the amount of all defective or rejected glass manufactured by plaintiff and costs arising in connection therewith;

(2) All losses incurred by and charges made against the plaintiff for defective laminated glass produced by it or returned to it or charged in any way to the plaintiff by the Ford Motor Company under the agreement of October 17, 1927, hereinbefore mentioned, and by the distributors and jobbers and automobile and body manufacturers referred to in the hypothetical question or otherwise;

[fol. 674] (3) The amounts of laminated glass made by plaintiff and the amounts of all defective or rejected or returned laminated glass and the dates when same were proved to be defective or rejected or returned;

(4) The amounts of all royalties paid by the Johnston Glass Company and any other licensees under plaintiff's laminated glass patent.

Defendants offer to prove by the palintiff's books and records:

(a) That the laminated glass described in the Benedictus patent was not largely used in the automobile trade at the time referred to in the hypothetical question;

(b) That plaintiff had not created a substantial demand for laminated glass and that the market was not an easy one;

(c) That when the Duplate Company entered the field, instead of practically all risk having been eliminated and a substantial demand created, the exact contrary was the case and that it is not true that the license to the Duplate Company amounted practically to an invitation on the part

of the Triplex Company to divide the busines of the company between them;

(d) That the sales referred to for the years 1928 and 1929 were considerably less than the amounts stated in the hypothetical question and that these sales were, in effect, substantially changed and reduced by allowances which plaintiff was obliged to make by reason of defective, rejected or returned glass;

(e) That the amount of glass, if any, sold by the plaintiff in the years 1927 and 1928 or thereafter, whether for [fol. 675] optional or standard equipment at the alleged prices set forth in the hypothetical question, was inconsiderable and that much defective glass produced by plaintiff was rejected or returned or otherwise charged against plaintiff, thus greatly reducing the alleged price;

(f) That the alleged advertising value of the Ford Motor Company contract to the plaintiff, as well as its value from the standpoint of profits, was greatly reduced by reason of large amounts of defective glass made by the plaintiff and rejected or returned by the Ford Motor Company and by various customers, representatives and jobbers of that company and charged against the plaintiff by the said company under the contract;

(g) That rejects of laminated glass in the factory of the plaintiff and returns of defective glass by the Ford Motor Company and other automobile manufacturers were charged against the plaintiff by these manufacturers and that plaintiff accepted and agreed to these charges in large amounts;

(h) That the above mentioned rejections, returns and charges against the plaintiff on account of laminated glass sold during the accounting period extended beyond that period and as late as the year 1932;

(i) That any royalties received by the plaintiff under its license with Johnston Glass Company and other licensees, if any, were inconsiderable in amount;

(j) That damage to the plaintiff arising out of its alleged loss of sales was inconsiderable in amount; and

[fol. 676] (k) That plaintiff and distributing stations owned or controlled by the plaintiff lost large sums of

money during the accounting period in attempting to sell laminated glass to the general public.

Defendants desire to examine the books and records by accountants employed by them, covering all details in connection with the matters above mentioned, and to offer proof of the facts thus elicited and to require the production of the books and records themselves if any question is raised concerning the contents thereof.

The Master: Mr. O'Shea, what have you to say in answer to this proposal?

Mr. O'Shea: Plaintiff most strenuously objects to the examination of any of its books. It asserts that the Master, in its opinion, has no power to compel the plaintiff to submit to an examination of its books. Further, even if the defendant did have an examination of its books for the purposes stated in the argument of counsel that has just been put on the record, all of the testimony would be immaterial and irrelevant and incompetent. The issue here is not whether the plaintiff made any profits or made any losses. The issue is whether the defendant made profits or losses, and all of the issues in that question which are now raised by the testimony, the accounts and the exhibits are questions of law and no amount of testimony, whether competent or relevant or material, that could be gleaned from the books of the plaintiff would change that question of law. With respect to the application in so far as it applies to the hypothetical questions that were propounded to plaintiff's expert witnesses on the question of reasonable royalty; if [fol. 677] those hypothetical questions are not based upon the facts that the plaintiff has proved in this case, then it is going to be just too bad for the plaintiff. So in order not to extend this record, the plaintiff simply states that it objects to the application now made by the defendant.

(Discussion off the record.)

The Master: The defendant will proceed with its case without the waiving of any rights with respect to having produced the books and records of the plaintiff corporation under the application already made.

PHILIP F. DATZ, a witness produced on behalf of the defendants, having been previously duly sworn, testified as follows:

Direct examination.

By Mr. Christy:

Q. You have already given some testimony in this case on behalf of the plaintiff, have you not?

A. Yes, sir.

Q. I have asked you to prepare and produce a tabulation showing the operating losses suffered by the Duplate Corporation and its predecessor during the accounting period, particularly in respect to polished plate glass, both directly and as made up into laminated glass. Have you done so?

A. Yes, sir.

Q. Will you please produce your tabulation?

A. (Witness does so.)

Mr. Christy: The tabulation produced by the witness is offered in evidence as Defendants' Exhibit "O."

[fol. 678] Q. Now, Mr. Datz, the first sheet of this exhibit appears to be a recapitulation of the losses shown for individual months during the accounting period upon the sheets which follow the first sheet. Is that correct?

A. Yes, sir.

Q. Now, there are two columns on this recapitulation sheet, one headed "Polished Plate Feet" and the other headed "Duplate Feet". What is included in these respective columns?

A. In the first column headed "Polished Plate Feet" it represents the loss as shown in polished plate feet on the Form "J" for the accounting period.

Q. And the other column?

A. The second column, headed "Duplate Feet", represents a loss as shown on the Form "J" sustained in all departments following the cutting department.

Q. And that includes glass losses?

A. Yes, sir.

Q. So that in order to determine the feetage of plate glass included in the second column, headed "Duplate Feet", you must multiply the figures in that column by two. Is that correct?

A. That is correct.

Q. These are all losses of the Duplate Corporation and its predecessor, the Pittsburgh Safety Glass Company?

A. Yes, sir.

Q. So that, if I understand this correctly, it shows a loss of 677,401 square feet of plate glass in single sheets and 1,041,284 square feet of plate glass in Duplate, representing 2,082,569 square feet of single sheets of plate glass. Is that correct?

A. That is right.

Q. Now, in the third column, under the head of "Amount", what does that represent?

[fol. 679] A. This represents under the heading of "Amount" the value of the losses as shown on the Form "J."

Q. What do you mean by "value" there?

A. This value represents the material and labor consumed in the manufacture of the product lost in operation.

Q. Now, passing the early months, go to June, 1928 of this exhibit. You show first a loss of 117 plates of polished plate glass, amounting to 468 feet, which you have priced at 33 cents plus per square foot. Is that correct?

A. That is correct.

Q. And that means plate glass in the condition in which it was received?

A. Yes, sir.

Q. Now, going down a step, under "Assembly Department" you show two figures totaling 144 square feet of Duplate, priced at 66 cents plus per square foot. Is that correct?

A. That is correct.

Q. And what was the nature of that loss?

A. You mean the price?

Q. No, the glass loss.

A. That consisted of an operating shrinkage in the assembly department.

Q. And you have priced that at double the cost of the plain plate glass sheets—that is, the cost of two sheets instead of one. Is that correct?

A. Yes, sir.

Q. Your figure of 66.954 cents seems to be slightly more than double the figure just above of 33.358 cents. What is the reason for that difference?

A. The price 33.358 represents the value of the glass as it is taken out of the polished plate stock. The price 66.954

represents the value of two pieces of glass taken out of [fol. 680] polished plate stock after the loss in polished plate stock breakage has been deducted.

Q. Now, coming to "Pressing Department" in this same month of June, 1928, you show a total of 9363 square feet of Duplate loss, to which you give a value of $1.11 plus per square foot. What does that value represent?

A. This value represents the cost of the material and labor in the product as it leaves the assembly department, which is the previous department.

Q. That is, this represents glass delivered to the pressing department and there rejected. Is that correct?

A. That is correct.

Q. Then your next department is the edging department, where you show a loss of 1792 square feet of Duplate, priced at $1.66 plus per square foot. What does that value represent?

A. This value 1.66170 per square foot represents the cost of material and labor as the product leaves the pressing department.

Q. And which was received in the edging department and there rejected. Is that correct?

A. Yes, sir.

Q. Now, next below, you have in the column headed "Amount" sums for edgework. What does that mean?

A. These amounts shown under the heading "Amount" represent the material, labor and overhead of the edgework on the rejects in the edging department.

Q. That, of course, was additional to the value of the Duplate as received in the edging department. Is that right?

A. Yes, sir.

Q. So that your total operating loss or shrinkage in the month of June in glass amounted to 468 feet of single sheets [fol. 681] and 11,299 feet of Duplate (consisting of two glass sheets). Is that correct?

A. That is correct.

Q. So as to make it entirely clear, your glass loss in June was 468 square feet plus double 11,299 square feet or 22,598 square feet? Is that correct?

A. That is correct.

Q. Now, on this June, 1928 sheet you also have inventories listed, the first item of which was polished plate stock,

2176 feet. Was this a physical inventory or a book inventory?

A. This inventory, 2176 feet of polished plate stock, was a book inventory.

Q. Not a physical inventory?

A. Not a physical inventory.

Q. Now, the other items of these inventories—assembled glass, pressed glass, edging department glass, and finished stock—were they physical inventories or book inventories?

A. They were physical inventories.

Q. I believe you stated heretofore in your former testimony that for some little time physical inventories of your polished plate stock were not taken. When did you commence the taking of physical inventories of your polished plate stock?

A. The physical inventory of polished plate stock was taken at the end of September, 1928.

Q. And monthly thereafter?

A. And monthly thereafter.

Q. Now, let us turn to your sheets for September, 1928, as to which you were examined in some detail in your former testimony. Attention was mainly directed to the plate glass loss of 92,038 feet recorded for that month. I understand that the first sheet of this exhibit which has to do with September, 1928 is in explanation of that recorded loss. Is that correct?

A. That is correct.

[fol. 682] Q. Just to make it entirely clear, will you explain the figures shown on that sheet which result in that loss figure of 92,038 square feet?

A. The ledger account, polished plate, as shown on the first sheet of the exhibit, represents the inventory of glass as shown on the books September 1, 1928, is 95,532 feet. The amount of glass received from the Pittsburgh Plate Glass Company during the month of September is 809,178 feet. The amount of glass received from reclaiming operation, 41,856 feet, making a total of 946,566 feet, from which we deduct an inventory of 131,600 square feet on hand September 30, 1928, which is a physical inventory; showing glass transferred from polished plate stock during September, amounting to 814,966 feet. Deducting the glass used in the assembly department, as shown on the Form "J," totaling 722,928 feet, shows a balance of 92,038 feet

polished plate loss in September as shown on the Form "J."

Q. That was not all polished plate loss in September? This represents the first month in which you checked your book inventory against an actual physical inventory. Is that not correct?

A. Yes, sir; that is correct.

Q. And some of that 92,038 feet may have been lost any time before September? Is that correct?

A. That is correct.

Q. These figures are all taken from your regular records, are they?

A. Yes, sir.

Q. And you believe them to be correct?

A. Yes, sir.

Q. Now, please turn to your second sheet for September, 1928, and explain the items under the first heading, "Cutting Operation Loss" and the item under "Polished Plate Feet," 92,038 square feet.

[fol. 683] A. Under the heading "Cutting Operation Loss," showing polished plate feet loss 92,038 feet, you will find the following: Polished Plate Glass returned from the Assembly Department—actual size—103,795 feet.

Q. What does that mean?

A. That represents the glass which has been returned from the assembly department.

Q. Why?

A. Due to defective material.

Q. You mean returned as defective glass or defective product of the assembly?

A. Defective product of the assembly. From this amount we have salvaged 55,559 feet, allowing a loss in the glass returned from the assembly department totaling 48,236 square feet.

Q. That is in single sheets?

A. That is in single sheets.

Q. Proceed, please.

A. Glass broken in handling stock, 977 feet; loss cutting polished plate glass to order size, 13,090 feet.

Q. What does that mean?

A. It represents the loss sustained in the actual bracket size cut from the original polished plate furnished for this particular order.

Q. You mean it is only waste edges or do you mean glass that may have been broken in cutting, or both?

A. Both. The balance, 29,735 feet, represents an inventory adjustment of the polished plate glass account which heretofore had not been adjusted to a physical inventory.

Q. So that you have two loss figures there, totaling respectively 48,236 square feet of single sheets and 43,802 square feet of single sheets, making up the item 92,038 square feet. Is that correct?

A. That is correct.

[fol. 684] Q. And the shrinkage in the other departments is the same as you have already explained?

A. Yes, sir.

Q. Now, Mr. Datz, please turn to October. You and Mr. O'Shea had a great deal of difficulty about this item of 14,567 square feet of plate glass stock loss recorded in that month. You said that was all breakage and Mr. O'Shea asked if you got a bull in your stock room that month, and he subsequently asked another witness if you could have lost all that from breakage? Was it all breakage?

A. No, it was not all breakage.

Q. And the items under head of "Polished Plate Stock Loss" on your October, 1928, sheet show how these losses were incurred, do they?

A. Yes, sir.

Q. Will you please repeat as you did before just what these items mean?

A. Under the heading "Polished Plate Stock Loss" we show an item of 5629 square feet rejected by the assembly department as reported from October 1st to October 18th, and an item of 4000 feet of polished plate rejected by the assembly department, which is an estimate based on the previous eighteen days operation in the amount of glass rejected by the assembly department.

Q. That is, if I understand you, you only had those reports for the first eighteen days of October?

A. Yes, sir.

Q. Which amounted to 5629 square feet. Is that correct?

A. That is correct.

Q. And for the rest of the month you estimated a corresponding shrinkage at the same rate, which would amount to 4000 square feet. Is that correct?

A. That is correct.

Q. Please proceed.

[fol. 685] A. The item 2311 feet represents the shrinkage or loss in the assembly department.

Q. That is, in addition to the two items above. Is that correct?

A. That is correct, and the balance, 2627 feet, represents an inventory adjustment, physical inventory, taken at the end of October, 1928.

Q. What do these index letters "A," "B" and so forth mean on this sheet?

A. Where the index letters are shown in this report, "A," "B" and "C," it means that we have the original production records to substantiate the figures as shown on this report.

Q. Now, up above, at the top of the October statement, you have an item, "Polished Plate Cutting Loss reported," of 23,801 square feet of single sheets of plate glass. What is that?

A. This 23,801 square feet of polished plate feet represents the loss in the cutting department before the glass is delivered to the assembly department.

Q. And that as before, if I understand, includes both breakage in the cutting department and losses due to cutting down unnecessarily large plates. Is that right?

A. That is right.

Q. Now, let us return to this statement again and try to make things clear. The amounts, or what you call the values, which you give in price per square foot of duplate feet, first referring to the pressing department loss, means the cost per square foot expended upon the rejects at the time that they reached the pressing department. Is that right?

A. That is correct.

Q. And coming to the edging department, in like manner the value which you there give of $2.05 per square foot represents the actual expenditure upon the rejects in the edging department down to the time that they reached the [fol. 686] edging department. Is that right?

A. That is right.

Q. And the additional amounts under the heading "Edgework" represent work actually expended or material used in edging rejects in that month in the edging department. Is that correct?

A. That is correct.

Q. I will have occasion presently to point out some other mistakes in your first testimony in addition to this matter about the stock loss in October, 1928. I will ask you at this point what were the circumstances under which you were called to testify formerly, and how did it happen that you made those mistakes.

A. At the time the previous testimony was taken I was away from the Duplate Corporation for about seven months, during which time I did not review any of the records of the Duplate Corporation. I was employed at the Ford City plant of the Pittsburgh Plate Glass Company and was called by phone to Pittsburgh and came down and was placed upon the witness stand without any knowledge of what questions might be asked. Under these conditions my memory was kind of hazy and I became easily confused.

Q. Now, referring for a moment to glass salvaged or separated from Duplate rejects, how was that handled? I mean by that, Mr. Datz, how did that reappear in your accounts when it did reappear?

A. Any glass that might have been separated from the rejects was placed into the operation at the value at which it entered the operation in polished plate glass. In other words, it was placed into our polished plate stock and the operations credited for any glass that was recovered by separation.

Q. And then, if this glass was subsequently laminated and sold, you of course charged the account with what you got for it?

[fol. 687] A. That is correct.

Q. Now, in December of 1928 you show a stock loss of 118,222 square feet of single sheets of polished plate glass. Am I correct in understanding from your testimony that this represents glass separated, as stated by you just above, and afterward found to be useless for your purposes and therefore charged off in that particular month?

A. That is correct.

Q. Now, at what point in the Duplate factory did the glass become the property of that company?

A. You mean the polished plate glass coming in?

Q. Yes.

A. In what period?

Q. Well, when you were running the old factory.

A. At the time the glass was delivered into the cutting

department of the Duplate factory, which was then located in the wareroom of the Pittsburgh Plate Glass Company.

Q. And you were mistaken, were you not, where you said in your former testimony on page 92 that if the glass was broken in transit in a distance of approximately half a mile from the cutting room to the assembly department, it was replaced by the Pittsburgh Plate Glass Company?

A. That was an error.

Q. There seems to be one small mistake on page 89 of your former testimony where you said you were giving breakage for the two months of May and June, 1928. What you gave there was the breakage for those two months in 1929, wasn't it?

A. Yes, that should have been 1929 instead of 1928.

Q. Just to make a point clear, Mr. Datz, all through these statements where you have the index letters "A," "B," "C," "D," "E," "F," etc., they refer to what records? [fol. 688] A. To the original production records as used in compiling Form "J."

Q. Turn to October, 1928, please. You show there in red an inventory adjustment of 610 square feet of Duplate in the pressing department. What does that mean?

A. This 610 feet shown in red under the heading "Pressing Department Loss" is a credit to the loss reported by the production department. In other words, the pressing department in reporting their loss on the production records, have reported 610 feet more than what they should have reported.

Q. I will refer you for a moment to Plaintiff's Exhibit No. 10, which was produced by plaintiff's expert accountant, being a recapitulation of losses in both glass and pyralin. Leaving out of consideration for the present the recorded losses in pyralin, have you any criticism to make of this exhibit?

A. The total as shown on the exhibit of loss—grand total—2,179,682 feet, excluding the losses as shown under the heading "Pyralin Examination Department," consists of polished plate glass stock losses, plate glass cutting department losses, which are shown in single plate glass feetage; also, the assembly and pressing department, pressing department losses, carbital department, edging department losses, Duplate stock losses, which are shown here and incorporated on the Form "J" in Duplate feetage. In other

words, the total of these columns should have been multiplied by two to show the actual plate glass feetage loss.

Q. Now, look at the pyralin column on that Exhibit No. 10 for a moment. Have you anything to criticize in that column?

A. Under this heading, "Pyralin Examination Department" we have losses shown in both feet and sheets. The man who compiled this report evidently has included the [fol. 689] feet and sheets in the one total under the pyralin examination department loss and designated same as feet.

Q. There is one item on the sheet for August, 1928, in Defendants' Exhibit "O," under "Pressing Department Loss" entitled "Pressed glass rejected at Ford City." What does that mean?

A. The figure 11,053 feet, pressed glass rejected at Ford City, represents the glass laminated which was rejected at Ford City plant.

Q. Why did it go to Ford City?

A. Our edging department was quite limited at Creighton at the time and some of our glass had to be shipped to Ford City for edging.

Q. But it was Duplate that was manufactured at Creighton?

A. Yes, sir.

Q. Shipped to Ford City for edging and then shipped back again? Is that correct?

A. That is correct.

Q. Now, you said in your former testimony, I believe, that the plate glass which became a total loss to the Duplate Company and was charged off on its books as of no value was returned to the Pittsburgh Plate Glass Company and paid for as cullet. Is that correct?

A. That is correct.

Q. Have you a sheet there that will show your cullet sales to the Pittsburgh Plate Glass Company?

A. Yes, sir.

Mr. Christy: This sheet of defendant's cullet sales is offered in evidence and marked Defendant's Exhibit "P."

Q. And this sheet shows that the cullet which was returned by the Duplate Company to the Pittsburgh Plate Glass Company was paid for at the uniform rate of $8 per net ton. Is that correct?

[fol. 690] A. That is correct.

Q. Now, I asked you to prepare another exhibit showing the pyralin losses of the Duplate Corporation, so far as they appear on their books. Have you done that?

A. Yes, sir.

Mr. Christy: This sheet relating to pyralin losses is offered in evidence as Defendant's Exhibit "Q."

Q. Like your other exhibit, this exhibit of pyralin losses comprises on its first page a recapitulation and on the succeeding pages the losses in each month. Is that correct?

A. Yes, sir.

Q. I notice that this does not commence until May, 1929. Why was that?

A. Prior to May, 1929, the pyralin department was not shown on the Form "J." The material taken from the pyralin department was included as a raw material in the assembly department.

Q. So that on your Exhibit "O" the value which you gave to the losses in the pressing department and the edging department included pyralin which was actually in the Duplate which was lost in those departments?

A. That is correct.

Q. Now, what does this pyralin exhibit show?

A. This pyralin exhibit shows the number of feet or sheets of loss in the pyralin examination department, as shown on Form "J."

Q. What was this pyralin examination department? What did it do and what were these losses?

A. The pyralin examination department received the material shipped by the different manufacturers, stored the material, opened the cases and reinspected same and cut the pyralin preparatory to transfer to the assembly department.

[fol. 691] Q. What were these losses in this pyralin department? Did it include just loss in cutting the pyralin or what?

A. Any pyralin that might have been rejected in the assembly department before lamination was included in the pyralin loss as shown in the pyralin examination department.

Q. But no losses after the examination in the assembly department?

A. That is correct; no losses after.

Q. And I understand from this exhibit and from what you have already said that from May to September, 1929, this last pyralin account was kept in feet, and after that in sheets. Is that correct?

A. That is correct.

Q. And the values which you have given these pyralin losses have been computed accordingly. Is that correct?

A. That is correct.

(Adjournment was taken until 2 o'clock P. M.)

Afternoon Session

PHILIP F. DATZ, resumes the stand.

Direct examination (continued).

By Mr. Christy:

Q. Just one more question, Mr. Datz. I understand that all the glass included in this Exhibit "O" was one-eighth-inch polished plate glass. Is that correct?

A. That is correct.

Cross-examination.

By Mr. O'Shea:

Q. Mr. Datz, I am directing my questions now to Exhibit "O." Will you please state what price you figured [fol. 692] the value of the glass at on Exhibit "O"? That is to say, was it the billing price from Pittsburgh Plate Glass Company or the cost price of that glass to Pittsburgh Plate Glass Company?

A. It was at the average price paid to the Pittsburgh Plate Glass Company by the Duplate Corporation.

Q. As appears on the bills from Pittsburgh Plate Glass Company to Duplate Corporation?

A. That is right.

Q. And is not, therefore, the cost of that glass to Pittsburgh Plate Glass Company?

A. That is right.

Q. Now, on the first page of Exhibit "O" you have a summary of the feetage for the respective years at the bot-

tom of that page and the first item is "Unlaminated Glass Loss in Polished Plate Feetage," and for the year 1928 amounts to 286,120. Does that figure comprise the additions of all the figures on the following sheets listed under the heading "Pol. Plate Feet"?

A. Yes, sir.

Q. And that is true of the other two years, or the balance of the period of the accounting?

A. That is correct.

Q. Now, turn to the month of May, 1928, on Exhibit "O." I notice there the first item is marked "Pol. Plate Breakage-Assembly." Will you please explain that entry?

A. Do you mean as a whole for the two items of 30 feet —29-2 and 1 foot?

Q. Take the first—29 feet 2 inches.

A. That figure 29-2 represents the glass as reported by the production department that was broken in the assembly department before lamination.

Q. And does the next item, reading "Pol. Plate Breakage-Assembly" mean the same thing?

[fol. 693] A. Yes, sir.

Q. It is just in two items?

A. Yes.

Q. Are we to understand wherever any such breakage appears throughout the whole Exhibit "O" it will be marked "Breakage"?

A. It will be marked "Breakage."

Q. And if it is not marked as breakage, it will be something else than breakage?

A. That is right.

Q. Now, turning to the month of October, 1928, being a part of Exhibit "O," and directing your attention to the heading "Polished Plate Stock Loss" and the items under that heading, do I understand it correctly that this exhibit indicates that those items under that heading "Polished Plate Stock Loss;" the first of which reads, "Pol. Plate rejected by Assembly reported period 10/1 to 10/18/28" means that glass after getting into the assembly department and being assembled was there rejected for some cause or other and then, by reason of your accounting system, you took the credit for that rejection back into the cutting department? Is that a correct statement of what happened?

A. We wouldn't take credit for that back in the cutting department. We would charge that back into the polished plate stock, but it would eventually come down into the cutting department at a lower figure.

Q. Was it glass that had been partly processed into laminated glass?

A. No, it was prior to lamination.

Q. In other words, this glass had gotten into the assembly department and for some reason in the assembly department the glass was found defective. Is that it?

A. That is correct.

Q. Does the record indicated on this Exhibit "O" by the symbol letter "A" show why it was rejected?

[fol. 694] A. No, it does not.

Q. Is there any other record indicating why that glass was rejected?

A. No, there is not.

Q. Now, on that same month, October, 1928, being a part of Exhibit "O," there is a heading "Pressing Department Loss," and the first item there reads "Pressing Dept. Shrinkage Turn # 1." First, for purposes of the record, Turn # 1 means shift in the factory, I assume. Is that correct?

A. That is correct.

Q. Now, what does the shrinkage indicate or mean?

A. That represents the glass that is rejected in the pressing department after lamination but before being transferred into the edging department.

Q. In other words, am I to understand then that this particular item means that 34,127 feet of glass, single sheet glass as distinguished from Duplate glass, having been processed into laminated or duplate glass, was then rejected? Is that correct?

A. No, the 34,127 feet represents laminated feet which has been rejected.

Q. So that in reality there was twice that rejected?

A. Of polished plate?

Q. Of polished plate rejected. Is that correct?

A. That is correct.

Q. Am I correct then in understanding that wherever the word "shrinkage" appears it means what we have sometimes referred to in this record as a reject?

A. An operating reject.

Q. It means an operating reject?

A. That is correct.

Q. An operating reject is one that is a piece of laminated glass that has been rejected after some operations have been performed on it. Is that correct?

A. That is correct.

[fol. 695] Q. And those operations were designed to end up with laminated glass?

A. Finally.

Q. Now, that definition with respect to shrinkage is the same for all of the months that appear on this Exhibit "O," as I understand it?

A. Yes, sir.

Q. Now, turning to December, 1928, there is an item there referred to as stock loss and amounts to 118,222 feet. That, as I understand it from the description of it, represents twice that amount of polished plate glass that had fully been processed into laminated glass and for some reason or other then rejected and sent back to the polished plate stock room for an attempt at salvage or reclaiming it, and it was reclaimed or attempted to be reclaimed and then thereafter, at some period, it was discovered that that glass was not suitable for use in the further manufacture of laminated glass. Is that the process that it went through?

Mr. Smith: I think, Mr. O'Shea, that you misunderstand the facts in the first part of that question. I would like to have it read to the witness, please.

(Question read.)

A. No, it does not represent twice that amount. That represents half that amount in laminated glass.

Q. (Question again read.)

A. With the exception I have mentioned that that does not represent twice that amount, but half that amount in Duplate feet which had been separated through a reclaiming process and placed into polished stock to be used in the manufacture of Duplate if the sizes were at least possible to use.

Q. Was there ever a decision as to whether it was possible to use it?

A. Yes, there was a decision.

[fol. 696] Q. And what was that decision?

A. That it was not possible to use it.
Q. Then what happened to the glass?
A. Sold to Pittsburgh Plate Glass Company as cullet.

By Mr. Smith:

Q. What do you mean by cullet, Mr. Datz?
A. Cullet represents the broken glass that is used in the manufacture of plate glass as one of the raw materials.
Q. That is, it goes back into the melting furnace again?
A. Goes back into the melting furnace.

By Mr. O'Shea:

Q. Now, turn to January, 1929, and referring to the pressing department loss, after the symbol letter "G" you have an item called "Pressing Shrinkage—Block Size Duplate". You have already defined the term "Pressing Shrinkage". What does the "Block Size Duplate" indicate over and above the description of the other phrase?
A. Block size is the term known to cover the perfect rectangle.
Q. Well, does it add anything to the phrase "Pressing Shrinkage"?
A. No, sir.
Q. As indicating any reason for the reject or anything of that sort?
A. No, sir.
Q. And that is true of the item after the symbol letter "I", the phrase there used being "Saw Cutting Operation"?
A. That is correct.
Q. And the next item also, the phrase being "Small Autoclave"?
A. That is correct.
[fol. 697] Q. None of those phrases add anything to the pressing shrinkage?
A. No.
Q. Now, going back to September, 1928, on Exhibit "O", and referring to the second page of that month, I notice under the cutting operation loss an item marked "Inventory adjustment", 29735. Will you please explain just what that item means?
A. Prior to September 30, 1928, no physical inventory adjustment was made with the book inventory as shown in

the adjusted plate stock account, and when we come to reconcile it with the physical inventory at the end of that period we find that in addition to the glass already reported as being used 29,735 additional has been lost in the operation, or used in the operation.

Q. By that am I to understand it was your thought that it was actually used in the operation and that the reason for the necessity of the adjustment is that it had not been properly reported, or some such thing as that, in those back months?

A. In the prior back months it had not been reported as being used.

Q. If it had resulted in good laminated glass, of course there wouldn't have been a necessity for the adjustment?

A. No.

Q. In other words, it must have been lost some way in the process? If it had been good, it wouldn't have been lost?

A. That is correct.

Q. Now, in the next month, to-wit, October, 1928, as appearing on Exhibit "O", there is an inventory adjustment there under the polished plate stock loss which amounts to 2627. Will you please explain that item?

[fol. 698] A. The inventory adjustment of 2627 square feet represents the adjustment of the book inventory to the physical inventory for that period of October, 1928.

Q. That is the same as in the previous month, is it?

A. Yes.

Q. And represents improper reports possibly, or something of that sort, of the rejects?

A. That is correct.

Q. Referring now to Defendant's Exhibit "P". That exhibit indicates in pounds the total rejected glass breakage and all other losses in the Duplate operation, does it not?

A. Not all other losses in the Duplate operation. That represents the losses in polished plate glass alone.

Q. I meant that. It represents all losses in polished plate glass that were caused by breakage, shrinkage, rejects or otherwise?

A. That is correct.

Q. And if this pounds total here, amounting to 2,869,690,

were converted into feetage, it would check up with the feetage indicated in your Exhibit "O"?

A. No, sir, it would not.

Q. Well, what would be the differences?

A. Well, included in this tonnage figure here is polished plate glass ranging from one-eighth up to inch or inch and a quarter thick; also some window glass shrinkage that we might have then also thrown right in with the polished plate glass.

Q. Well, do I understand this 2,869,690 pounds of glass, as indicated on Defendant's Exhibit "P", includes glass that was sold or delivered to others than Duplate Corporation?

A. I don't quite understand you.

Q. I don't think I quite understood your previous answer. I thought it meant that this total of 2,869,690 pounds, as shown in Defendant's Exhibit "P", included all glass that [fol. 699] went back to Pittsburgh Plate Glass Company, both one-eighth inch glass, one-fourth inch glass and so forth and so on.

A. That is correct.

Q. Well, Duplate purchased no one-fourth inch glass, did they?

A. Yes, they did.

Q. Oh, those are for the specialties you mean?

A. That is correct.

Q. Well, that is what I had in mind. It includes then all of the rejected and broken glass that had been delivered to Duplate at a market price and was thereafter sent back to Pittsburgh Plate Glass Company and charged against Pittsburgh Plate Glass at the cullet rate?

A. That is correct.

Q. Am I not correct then in saying that this tonnage or pounds figure here ought to check up with the footage in Exhibit "O"?

A. No, sir, it will not.

Q. Is that because Exhibit "O" has no accounting of glass other than one-eighth inch glass?

A. That is correct.

Q. Well, why doesn't Exhibit "O" have the other glass? Is there some reason for not putting that in?

A. Exhibit "O" has been used to show the losses as shown in the Form "J".

Q. And Form "J" only covered one-eighth inch glass?

A. Form "J" covered one-eighth inch glass, which was Duplate.

Q. Didn't Form "J" cover bullet-proof and other specialties?

A. No, sir.

Q. Referring now to Defendant's Exhibit "Q." At what price did you compute the values that appear on that exhibit?

[fol. 700] A. The price used in computing the value of the loss as shown in feet was at the average price per foot of the pyralin taken from stock, and the price used in figuring the value of the loss as shown in sheets was computed at the average price per sheet taken from stock.

Q. That price is the price paid by Duplate to du Pont Viscoloid Company, as shown on the bills of du Pont Viscoloid Company?

A. It is the price as shown on the bills from the du Pont Viscoloid Company to the Duplate Corporation, plus any freight charges and handling charges in placing it in stock.

Q. Are you able to state from the records that you have before you just what is meant by the use of the word "shrinkage" on Form "J", which is applied, as I understand it, for the first time in the month of August, 1929?

A. Not under August, 1929, it doesn't appear here.

Q. It doesn't appear on your Exhibit "Q"?

A. No, sir.

Q. It does appear on Form "J" or Schedule "J", does it not?

A. It appears on Schedule "J" as shrinkage.

Q. Are you able from your records now to state what is meant by that word "shrinkage" when used in connection with pyralin there?

A. The term "shrinkage" there is intended to cover any loss deriving from the cutting of an original size sheet of the pyralin to a pattern used in the laminated product.

Q. Are you testifying from some record that you have now? Is there some record that represents that?

A. No, there is no record.

Q. That is just your recollection?

A. Just my recollection.

[fol. 701] Q. Might it not be something that was defective in the pyralin itself rather than the cutting to a smaller size?

A. It may be.

Q. This Defendant's Exhibit "O". That exhibit is based on your Form "J" or Schedule "J", is it not?

A. Yes, sir.

Q. As supported by such other production records as you had and as are indicated by the symbol letters that appear before the respective items?

A. That is correct.

Q. Which enables you to further break down the items shown on Form "J" or "Schedule "J"?

A. That is correct.

Q. And that same thing is true of Defendant's Exhibit "Q", relating to the pyralin?

A. Yes, sir.

Redirect examination.

By Mr. Christy:

Q. Referring to this Exhibit "P", the glass which you returned to the Pittsburgh Plate Glass Company as cullet was all broken single sheets, wasn't it?

A. Yes, sir.

Q. That is, this cullet didn't include any defective Duplate at all?

A. No, sir.

Q. That is, of course, unless you separated some Duplate and it included some of the separated sheets. Is that correct?

A. Yes, sir.

Q. And you didn't separate any Duplate, if I understand it, after the first of 1929?

A. If we did separate any of it, it would go into the records and be shown on the Form "J".

Q. Well, it isn't shown, is it, after December, 1928?

[fol. 702] A. I don't recall it unless I would go through them.

Q. Well, Mr. O'Shea has made it rather important. I wish you would find out whether you did separate any Duplate after December, 1928, or if you stopped, when you stopped.

A. If there was any separated, it is not shown in the records.

Q. Well, at all events, you wouldn't expect this cullet account, as converted into square feet, to check with your Exhibit "O", for example?

A. No, sir.

Q. Now, in reference to these monthly inventory adjustments, as an example was pointed out to you in October, 1928, have you had any experience in plant cost accounting outside of Duplate and Pittsburgh Plate Glass Company?

A. Yes, sir.

Q. I will ask you the general question whether in all cases of plant accounting, where physical inventories are taken, it is not necessary as a routine matter to adjust the book inventory to the actual physical inventory.

A. You mean that it is not necessary or is it necessary?

Q. It is necessary and it is done as a matter of routine everywhere?

A. Yes, sir.

Q. That is just as true of the plate glass factory as it is of the Duplate factory?

A. Yes, sir.

Q. Now, referring to this same month of October, 1928, your attention was called to the item of 5629 square feet "Polished Plate Rejected by Assembly", and, for that matter, to the other items under the same head. That all represents plate glass that had been cut in the cutting [fol. 703] department of the Duplate Corporation?

A. Yes, sir.

Q. And it was cut to sizes there for lamination?

A. That is correct.

Q. And it was your custom in the assembly department, as I understand, to inspect the glass when it came to the assembly department prior to assembly?

A. Yes, sir.

Q. And that means rejections at that point, does it—this 5629 square feet?

A. That is correct.

Q. Now, this shrinkage in the pressing department. What does that include?

A. You mean as to the nature of the rejects?

Q. Yes.

A. It may include any glass that is rejected for the following defects——

Q. You need not enumerate them all. Give it to me generally.

A. Broken, let-gos, white edges, dirt, burnt, dry spots, separation——

Q. It did include breakage?

A. Yes, sir, it did include breakage.

Q. And any other reasons for rejection that occurred in the pressing department?

A. That is correct.

Q. Now, in the month of January, 1929, and on through subsequent months as shown on your Exhibit "O", there were two plants running, called No. 1 Plant and No. 2 Plant, were there not?

A. Yes, sir.

Q. And referring to September, 1929, for example, we do not see that classification but only Turn No. 1 and Turn No. 2. Can you tell why that was?

A. In September, 1929, the plant No. 2 was the only plant that was operating.

[fol. 704] Q. In answer to one of Mr. O'Shea's questions you said that this Exhibit "O" was based upon your Form "J", together with what additional information you got from plant production records as indicated by the index numerals "A", "B", "C", etc. That is correct, is it?

A. That is correct.

Q. Now, please refer to September, 1928, and your explanation of this polished plate glass loss of 92038 feet. You have no index numerals on your Exhibit "O" in connection with these particular items, have you?

A. What sheet is that—8 or 9?

Q. Both sheets, so far as that particular matter is concerned.

A. As far as the polished plate is concerned, no, we don't show any letters or index.

Q. Then, how was it that you were able, as Mr. O'Shea put it, to break down this figure of 92,038 feet in September of 1928?

A. I must have had some record there to get it.

Q. Let me suggest, didn't you tell me when you prepared this Exhibit "O" that you had found your own original work sheets for that particular matter?

A. For the month of September, 1928.
Q. And that was true?
A. That is correct.

Recross-examination.

By Mr. O'Shea:

Q. I think you have already said this, Mr. Datz, but going back to this term "shrinkage" again which, as I understand, you have stated would be a reject caused by breakage, let-gos, and some fifty-two or nearly that amount of other causes. Do your records show how much of any par- [fol. 705] ticular amount of glass stated to be shrinkage, either operating shrinkage or otherwise, was breakage?
A. To be shown in feet, do you mean?
Q. Yes.
A. No, we do not have any feet.
Q. Where it said shrinkage, therefore, you are not able to determine from your records how much of that shrinkage was caused by the breaking of glass in handling and how much was caused by the other reject causes?
A. Not in feet.
Q. Well, could you show it in any other way?
A. We have it in plates.
Q. You have put it here in feet always?
A. That is correct. We have no records showing the number of feet rejected for the various defects in feet but we did have a record showing the defects and the classes of defects in plates.

Re-redirect examination.

By Mr. Smith:

Q. Mr. Datz, referring to Exhibit "O", I understand that that shows the plate glass rejected for various causes. You started to give a number of the kinds of defects and it was found not necessary to continue that. Am I right that the result of that is shown in Exhibit "F"?
A. That is the glass shown for different causes—why it was rejected.
Q. These rejects. Are they summed up in Exhibit "O"?
A. Yes, the total.

Q. And therefore anything that was in breakage would be in Exhibit "O", as well as other things?

A. That is correct.

Q. I think you misunderstood a question and said the breakage was not in Exhibit "O".

A. That was an error then.

[fol. 706] C. L. HENRY, recalled.

Direct examination.

By Mr. Christy:

Q. Mr. McHenry, I have asked you to make up a summarized account which will show what became of all of the one-eighth-inch polished plate glass purchased by Duplate Corporation from the Pittsburgh Plate Glass Company. Have you done so?

A. I have.

Q. And this I said was purchased from Pittsburgh Plate Glass Company. You didn't purchase any one-eighth-inch glass from anyone else?

A. No, sir.

Q. So this covers all of the one-eighth-inch polished plate glass that got into the hands of the Duplate Corporation during the accounting period?

A. Yes, sir.

Mr. Christy: I offer that in evidence as Defendant's Exhibit "R".

Q. And beneath this plate glass account on Exhibit "R" you also have a pyralin account, have you not?

A. Yes, sir.

Q. Of similar nature?

A. Yes, sir.

Q. Now, turning to the plate glass account, Exhibit "R", it appears that at the beginning of the accounting period somehow the Duplate Corporation had in its possession 74 square feet of glass.

A. That is right.

Q. And during the year 1928 the bills showed purchases of 3,600,212 square feet. Is that correct?

A. That is correct.

Q. And down below you have glass receiver but billed in subsequent period, which I understand to be in 1929, 109,344 square feet?

[fol. 707] A. That is correct.

Q. Why was that separated?

A. That was set up on the Duplate books as being received, although it was not billed until the year 1929. The Pittsburgh Plate Glass Company closes their billing on the 25th of the month, this glass being delivered to Duplate after the close of billing in December.

By Mr. Smith:

Q. That is, any glass delivered after the 25th of the month of December, 1928, would be billed by the Pittsburgh Plate Glass Company in January, 1929?

A. Yes.

By Mr. Christy:

Q. So that the Duplate Corporation actually received during the year 1928 in one-eighth-inch polished plate glass 3,600,212 square feet, plus 109,344 square feet. Is that correct?

A. Yes, sir.

Q. Now, in the next line you have "Received from Reclaiming Department", 235,675 square feet. What does that mean?

A. That is glass that was reclaimed and put back into operation.

Q. And, of course, was originally included in the total mentioned in my last question?

A. Yes, sir, it was.

Q. Now, with Mr. O'Shea's permission, I will ask you this question: As to this reclaimed glass, when it was originally found defective it was charged off the books at no value. Is that correct?

A. Returns were never carried on our records at a value until it was determined that they had a value by reclaiming.

Q. Possibly we can get it this way: tell me just exactly what you did on your books with any defective glass.

[fol. 708] A. It was charged off as a loss.

Q. Now go ahead. Suppose you reclaimed it; what happened?

A. As it was reclaimed, it was put back into operation at the cost of reclaiming.

Q. And then, if it was sold what you received for it, of course, went into your receipts. Is that correct?

A. Yes, sir.

Q. Now, coming to the other side of this account for the year 1928, you show your total shipments and the next item is "Samples", 2299 square feet. What does that mean?

A. That is glass used for advertising samples, which is treated here as a sale.

Q. Now, here next you have "Transferred to Other Departments". What does that mean?

A. That is one-eighth-inch glass transferred to the specialty department and experimental department.

Q. And finally you have the item "Operating Loss (Exhibit "O")", 1,521,684 square feet. Turning to Exhibit "O", I find the corresponding figure is 1,521,665 square feet. How is that difference explained?

A. The shrinkage as shown on Exhibit "O" includes all glass. This Exhibit "R" includes only one-eighth-inch glass.

Q. Let me suggest, Mr. McHenry. Mr. Datz has just testified that Exhibit "O" includes only one-eighth-inch glass. Isn't it the fact that this very small difference is due to the fact that one of you included in his addition fractions of square feet, while the other one did not?

A. Well, that would probably account for the difference. It is so very small.

Q. Now, what does that figure in red, "Difference in Count P. P. G. Co. & Duplate", 169 square feet, mean?

[fol. 709] A. That is the difference in counting between what was delivered to the Duplate by the Pittsburgh Plate Glass Company and what the employees of the Duplate Corporation made the count to be.

Q. Then, to sum it up, does this account for the year 1928, included in Exhibit "R", include all one-eighth-inch polished plate glass which the Duplate Company handled during that year?

A. It does.

Q. Now, turning to the year 1929 on this Exhibit "R", the account is exactly the same, except of course that you have set off against the receipts the 109,344 square feet which you say was actually received in 1928?

A. Yes, sir.

Q. And there the difference between Pittsburgh Plate Glass Company and Duplate in the matter of count, or, I may say, glass unaccounted for, amounts to 2845 square feet. Is that correct?

A. Yes, sir.

Q. Now, referring to the operating loss, comparing your figure on Exhibit "R" of 1,090,070 square feet with the recapitulation of Exhibit "O," we find just two feet difference. Is that correct?

A. Yes. That is due to dropping inches.

Q. And in 1929, if I understand your figures correctly, you added into the receipts 113,360 square feet which was delivered after December 25, 1929, and not billed until 1930.

A. That is correct.

Q. And your explanation of the samples and the glass transferred to other departments I assume is the same as in 1928?

A. It is the same.

Q. And the same explanations hold good for the year 1930, so far as it goes?

A. Yes, sir.

[fol. 710] Q. And this indicates that at the end of the accounting period on May 30, 1930, you had on hand, or Duplate Corporation had on hand 101,041 feet of one-eighth-inch plate glass. Is that correct?

A. That is correct, according to the actual and book inventory.

Q. And the cost of that, of course, has not been credited to the Duplate Corporation in this accounting?

A. No.

Q. Now, as to the pyralin account on Exhibit "R," you have stated the pyralin throughout in feet only; while Exhibit "Q" has it for one period in feet and for another period in sheets. Is that correct?

A. That is correct.

Q. So those two accounts are not so directly comparable as in the case of glass?

A. No.

Q. Then, am I correct in saying that this glass account on Exhibit "R" covers and accounts for all of the one-eighth-inch polished plate glass handled by the defendant during the accounting period, except only the very small differ-

ences in the line entitled "Difference in Count P. P. G. Co. & Duplate"?

A. That is correct.

Q. Now, I want to ask you a few questions relating to the figures which you gave at the last session in the item on page 908 of the typewritten record, "Allowance for Use of Patented Process and Apparatus." I believe you said these figures represent the difference in manufacturing cost per square foot between the manufacture of one-fourth-inch plate glass averaged at Kokomo and Crystal City and the cost of manufacture of one-fourth-inch plate glass at Creighton, during the years 1928, 1929 and 1930. Is that correct?

A. That is correct.

Q. What items did you include in the cost of manufacture at these plants, generally stated?

[fol. 711] A. The cost of raw materials, operating costs, including fuel, power, light and water, labor, and all other operating costs except depreciation and obsolescence.

Q. Now, as to the conditions at Kokomo and at Crystal City, on the one hand, and at Creighton on the other, state whether or not your examination of the accounts indicated a substantial variation. I mean, for instance, take labor. Were the rates paid at Kokomo and at Crystal City, on the one hand, and at Creighton on the other very different?

A. Common labor at Creighton was paid forty cents per hour. At Kokomo common labor was also paid forty cents an hour, and at Crystal City common labor was paid thirty-seven cents an hour. The other occupations of labor that are comparable, out of five items, they are all higher at Creighton plant than at Works 8 and 9 averaged.

Q. Works 8 and 9 being Kokomo and Crystal City. Is that right?

A. That is right.

Q. That is to say, in so far as Creighton paid higher labor rates, that would tend to reduce the difference between the cost at the plants compared? Is that correct?

A. It is.

Q. Now, as to fuel, light and power. I don't want you to give the details, but are the costs fairly well in line? Is there an abrupt or great difference between them?

A. Well, I will name the items and give you a total for the various items for the years 1928 and 1929.

Q. No, I don't want to go into details. What I want to get is, is there any abrupt difference which would make this comparison unfair—either way?

Mr. O'Shea: Are you asking for opinion or facts?

[fol. 712] Q. (Continued.) So far as your examination of the books is concerned.

Mr. O'Shea: So far as your question calls for a conclusion, I object to it on the ground it calls for a conclusion.

A. There is not.

Mr. O'Shea: Same objection to that.

The Master: We will allow the answer to remain subject to the objection.

Q. Now, if you had included depreciation and obsolescence in the figures which are compared, would the difference have been greater or less?

A. The difference would have been less than one cent in the favor of the Pittsburgh Plate Glass Company.

By Mr. Smith:

Q. You mean one cent per square foot of glass?

A. Yes.

By Mr. Christy:

Q. That is, it would have increased this difference which you gave of twelve cents or reduced the difference of twelve cents?

A. It would have increased.

Q. It would have been thirteen cents instead of twelve cents. Is that what you mean?

A. The difference would have been less than one cent increase.

Q. Yes, but I just want you to answer it my way. Suppose you had included obsolescence and depreciation. The figure of .12474 which you gave for the year 1928 would have been approximately thirteen cents plus. Is that correct?

A. It would have been increased four-tenths of one cent.

[fol. 713] Q. Why did you omit to include depreciation and obsolescence?

A. Well, we did not want it to appear before the Master that we were straining at every thread to increase our claim.

Q. Now, I have forgotten whether you stated or not, but just what operations did you include in this comparison? That is, you included the formation of the sheet and the grinding of the sheet. Anything else?

A. The polishing and the wareroom cutting.

Q. There is one question I omitted to ask you about the statement on Exhibit "R." Your figure of glass received during the year 1928, being 3,600,212 square feet plus 109,344 square feet, differs from the statement of feetage of glass used on sheet 3 of defendant's original account, which is 3,722,601 square feet. What have you to say as to this difference?

A. You have used in your question the receipts; whereas, we show on Exhibit "R" used 3,700,031 feet.

Q. Well, at all events, whatever these differences may be, what you have shown on Exhibit "R" you have personally taken from the records and you know them to be correct?

A. We have, and this has been proven out with the inventories. Now, the Exhibit "R" shows the one-eighth-inch glass used only; whereas, on defendant's original statement all glass was included as being used, which would include any sheet or heavy polished plate used in laminating bullet proof. However, we found in trying to prove these figures up that there was a slight difference even yet between the actual used, as shown on Exhibit "R," and including the sheet glass and other glasses that might be used, as compared with that filed on the original statement. When the original statement was prepared this work was done at the factory at Creighton under the supervision of Mr. H. C. [fol. 714] Terbush who was then chief accountant. Mr. Terbush has since left the employ of the company and we cannot locate his work sheets to determine just how he arrived at the figure given to me when filing the original statement. Therefore, the original statement is out the difference between what is shown on Exhibit "R," adding thereto the sheet glass, heavy polished plate glass and thin glass used for aerolight lamination, and that shown on the original statement, as we have proven the feetage shown on Exhibit "R" with the inventories and purchases.

Q. And what you have said applies also to whatever differences there are between Exhibit "R" and the showing on your original statement for the years 1929 and 1930?

A. Yes, sir.

(The hearing was adjourned until Wednesday, October 5, 1932, at 10 o'clock A. M.)

Wednesday, October 5, 1932.

Met pursuant to adjournment.

Present: Master and counsel as before.

C. L. McHENRY, resumes the stand.

Direct examination (continued).

By Mr. Christy:

Q. Referring to Exhibit "R", as to which you were examined yesterday, the glass account, and the line "Received from Reclaiming Department," what did that reclaiming include—what operation?

A. In the glass it includes the glass that is separated by hot water and the glass that is reclaimed by cutting down.

[fol. 715] Q. That is, in the one case you recover the sheets in the Duplate individually and in the other case you take the rejected piece of Duplate and cut it down. Is that correct?

A. That is correct.

Q. Now, it has been said that the practice of separating the sheets was abandoned. Do you know anything as to that?

A. To the best of my knowledge it has been.

Q. Do you know when it was, approximately?

A. Mr. Datz looked that up yesterday.

Q. Well, at all events, if Mr. Datz was correct in saying it was abandoned about the end of 1928, your figures on Exhibit "R" for reclaimed glass in 1929 and 1930 would be only Duplate which was cut down? Is that correct?

A. Yes, sir.

Q. But 1928 might include both?

A. It does. I am sure of that.

Cross-examination.

By Mr. O'Shea:

Q. Mr. McHenry, do I understand you in your last testimony to say that the item on Defendant's Exhibit "R," reading, "Received from Reclaiming Department," for the year 1929, and amounting to 386,178 feet, was not a reclaiming process at all but simply cutting down a smaller sheet from a larger sheet?

A. All glass that is put back into operation from rejects or returns is classified under the heading of reclaimed. They are either cut down from a large sheet to a smaller sheet or by separation. It is my understanding that we discontinued the separating process in the year 1928 for the reason that we discovered, as I recall it, in September of 1928 that the glass that had been separated was not usable to such an extent that it was economical to continue with this process.

[fol. 716] Q. Well, if any glass was returned in 1929, that would be Duplate glass, of course?

A. Yes, sir.

Q. And it is your understanding that you never attempted to reclaim any of the returned glass in 1929?

A. By separation. We did reclaim it by cutting down.

Q. You mean cutting down Duplate?

A. Yes, sir.

Q. Well, now, is this 386,178 double sheets of glass, as it would be if it were Duplate, or is it single sheets of glass?

A. It is single sheets of glass.

Q. So that the amount of Duplate reclaimed would be half of that, approximately?

A. Yes, sir.

Q. Now, down under the pyralin analysis there, Mr. McHenry, in the year 1928, the item reading "Operating Loss" and amounting in that year to 1,617,670. Not all of that operating loss was in rejects of laminated glass, was it?

A. No. That includes the cutting loss.

Q. Exhibit "O" shows the amount of polished plate feetage loss in laminated glass amounted to only 1,235,545?

A. It does.

Q. And the amount of pyralin loss in laminated glass then would only be half of that, would it not?

A. It would. The amount of pyralin loss in laminated

glass would be half the feetage of the duplate loss in single sheets.

Q. And what would that amount to?

A. 617,772 feet in the year 1928.

Q. That indicates then, does it not, that there was a million feet of pyralin loss in the year 1928?

A. Practically that amount.

[fol. 717] Q. Now, can you tell us what those losses were made up of? I mean by that not to tell us as a guess, but is there anything in your records to indicate exactly what it was made up of?

A. The greatest of this amount would be in the cutting loss.

Q. Have you got a record showing what your cutting loss was?

A. Not a complete record. We can show you what the cutting loss would be on certain orders.

Q. What do you mean by "cutting loss," Mr. McHenry? Explain that phrase a little more.

A. That is the difference between the full size sheet taken from stock and cut to the pattern size of glass that it is to be used in. The remainder, which is trimmings around the edge, we term as cutting loss.

Q. Well, now, can you tell us from your records how much that amounted to in feetage?

A. That is shown in our Form "J" for certain months, after a certain period.

Q. In '28, does it? Will you look at your Form "J" and tell us that?

A. This isn't shown in the year 1928, but was shown May, 1929, and thereafter.

Q. We are talking now about 1928. So I ask you again have you any records which will show what you have defined as cutting loss to have been in feetage in 1928?

A. We have not.

Q. Now, what other kind of loss might be included in that difference of approximately a million feet in 1928?

A. Loss for defects.

Q. If there were any defects?

A. There were plenty.

Q. Have you any records to show how much feetage was rejected because of defects?

[fol. 718] A. We have a record that will show what pyralin was returned to the shipper for defects upon the first

inspection. Now, this pyralin may have been accepted and put in stock. When it was cut to pattern other defects were discovered that were not discovered in the first inspection which would throw out that pyralin from the operation.

Q. You say that may have happened?

A. It did happen.

Q. You recall that it did happen?

A. I am sure that it did happen.

Q. On what do you base your assurance of that?

A. From being at the factory when it was going on.

Q. By that I take it you mean you now recollect in your memory that someone at that time told you it did happen?

A. Sure.

Q. And that is the only basis that you have for this statement now that it did happen?

A. I saw them examine the sheet and point out the defects.

Q. Did they point out the defects to you?

A. Yes.

Q. Have you any record to show what amount of feetage those defects included?

A. No, we have not.

Q. Was there any other reason why this approximately a million feet of pyralin was rejected, other than this so-called cutting loss that you have defined and this possible defective pyralin?

A. I can think of no other at present.

Q. You say you recollect that they were examining these sheets and they showed you defects in them. What would those defects be composed of? What was the nature of the defects?

A. Haze and dirt spots. This wasn't discovered in the first examination because it was not as thorough as the final examination.

[fol. 719] Q. Now, you say you did return some pyralin to the du Pont Viscoloid Company and I assume such as was returned you got credit for?

A. We did.

Q. Why didn't you return this pyralin when it was found defective?

A. After it was cut to size you could not return it.

Q. You thought it hadn't come up to the specification as being fit for the purpose of making laminated glass?

A. Yes, sir. It should have been discovered in the first inspection and it was not.

Q. So that then you didn't inspect thereafter until after you cut to size? I say your second inspection did not occur until after you had cut this pyralin to a specific size?

A. That is my recollection.

Q. That is true of all of the pyralin that was rejected and is included in this approximately a million square feet and which was rejected, as I say, for the reason that it was defective?

A. Yes, sir.

Mr. Smith: I think he said it included the defects in the cutting room.

Mr. O'Shea: I say the defects were included in the million odd that were rejected.

Q. Now, let us take 1929. The rejected laminated glass in that year amounted to 776,324, as indicated on Exhibit "O," did it not?

A. It did.

Q. Now, the pyralin included in that would be half of that feetage, would it not?

A. It would.

Q. And that would amount to how much?

A. 388,162 feet.

[fol. 720] Q. Now, the total operating loss in pyralin for the year 1929, as indicated on Exhibit "R," amounts to 1,119,691, does it not?

A. That is correct.

Q. So that there is a difference there of how much?

A. 738,529 feet.

Q. Now, is that difference made up of the same character of losses as you have already indicated in 1928, namely, cutting larger sizes to smaller size and defective pyralin discovered on a second examination?

A. It is.

Q. There is some testimony here, I think, that you ultimately got into a position of purchasing your pyralin in bracket sizes. Is my recollection as to that statement correct?

A. We buy it in different sizes, as 20 by 50.

Q. That was cut to specific sizes?

A. Yes, sir.

Q. Well, now, those sizes generally corresponded with the brackets ordered by the customer, did they not?

A. Oh, no.

Q. They didn't?

A. No, they did not.

Q. Well, don't the invoices of the du Pont Viscoloid indicate that you purchased a very large quantity of pyralin cut to size?

A. It was all cut to a certain size.

Q. But that size was not the size of the bracket for specific orders?

A. No, indeed.

Q. Were those sizes much larger than the brackets of the specific orders?

A. Certainly.

Q. Very much larger?

A. Yes, we would get two pieces of pyralin—that is, two pieces of laminated glass out of one sheet.

[fol. 721] Q. Will you say that again?

A. One piece of pyralin would be large enough that we could get two pattern sizes out of it in many instances.

Q. There wouldn't be much wasted in that operation, would there?

A. Probably a third.

Q. A third of it wasted?

A. In instances, yes.

Q. Well, let us put it this way: isn't it a fact, as shown by the invoices from du Pont Viscoloid Company, that you bought a large quantity of pyralin cut to the specification of 14 x 44?

A. I would have to look at the invoices to answer that. In the year 1928 we purchased pyralin size 14 x 44 inches, 1.9 per cent. of the total purchases. In the year 1929 we purchased the same size 4 per cent. of our total purchases.

Q. Well, now, is it not a fact that you also made and sold to customers windshields of that size—14 x 44?

A. It is possible, but my percentage of purchases covers all purchases of 14 x 44 regardless of whose product they were used in.

Q. And isn't it also true that that specific size in pyralin—14 x 44—was purchased for the purpose of keeping down your cutting waste as much as possible?

A. It was.

Q. And wherever the same situation appears as to other sizes the reason for it was the same, was it not?

A. It was.

Q. Now, do your books show the amount of losses occasioned by this cutting to smaller sizes in the year 1929?

A. Our cutting loss is shown from May, 1929, on.

Q. Those are shown on Exhibit "Q," are they not?

A. They are, and this includes cutting loss and the examination loss.

[fol. 722] Q. The list on Defendant's Exhibit "Q" includes both examination loss and cutting loss?

A. It does.

Q. Now, commencing with October on Exhibit "Q," it is stated in sheets of pyralin as distinguished from feetage of pyralin, is it not?

A. It is.

Q. Am I to understand from that that you have no way of computing from your records how much the feetage was in those months commencing with October, 1929, and continuing on through the balance of the accounting period?

A. We have computed these items by feet, as shown on Exhibit "R."

Q. For those months?

A. For all months.

Q. Well, let us take the month of October that is shown on Exhibit "Q" as being 7292 sheets. What is that reduced to feetage?

A. We haven't our work papers to show that. I would have to get our work papers to show what size sheets are included in this amount for October.

Q. Will you bring those this afternoon and let me have that information?

A. If I can get them.

Q. Is there any way that we can agree upon an average of what was in those sheets?

Mr. Smith: I don't think that should be done, if the Master please.

The Master: We will wait for the records.

* * * * * * *

Q. Now, will you explain briefly just what is meant by the term "batch"?

A. Batch is made up of sand, soda ash, cullet and other chemicals which forms the batch that is melted into glass.

[fol. 723] Q. That is to say, the various ingredients that are necessary to produce glass are put into a tank or receptacle and there they are mixed and treated with heat so that they become a molten mass, and from that tank they flow out onto a table or conveyor and the term "batch," as used in your cost sheet, is that molten mass that comes out onto that conveyor or table. Is that it?

A. Batch is the raw material before it is heated.

Q. Well, isn't it a fact that there would be a substantial differentiation in the cost of a batch for making a sheet of glass three-sixteenth of an inch thick and the cost of a batch making a sheet of glass of greater thickness, and that that differentiation would increase as you ranged up in thickness on a sheet of glass?

A. The difference in cost per foot is very, very small. At our plants at Kokomo and Crystal City the batch cost in making quarter-inch and three-sixteenths is practically the same, as three-sixteenths is not made except when due to grinding it was ground thinner than the quarter-inch. This is often done in order to save the glass. In casting, defects are developed and in order to make the glass salable it must be reduced in thickness below the size that they were intending to make.

Q. Well, isn't it a fact that the cost of one batch for making, let us say, a half-inch sheet of glass would be greater than the cost of a batch for making a quarter-inch thickness of glass?

A. It would be more than twice as much because one-half inch glass you have to allow more for grinding.

Q. Now, then, what is the limit of the area or width of glass that it is possible to produce at the Creighton plant?

A. I am not familiar with the size of the mouths of the tanks at Creighton.

[fol. 724] Q. Are you able to answer this question, namely, isn't it true that during the period of this accounting Creighton produced glass of a width of only seventy-two inches?

A. I know that is the width of one tank that was operating, although we did have a tank classified as No. 3 that produced a ribbon something like ten feet in width.

Q. Was that tank included in this comparison that you made between Creighton, Kokomo and Crystal City?

A. It was not.

Q. What is the width of the glass produced respectively at Kokomo and Crystal City?

A. I do not know.

Q. Are you able to state from your records whether the Pittsburgh Plate Glass Company had a plant that was susceptible of producing glass ten feet wide?

A. We have at Ford City.

Q. Do you know whether the plant at Kokomo was susceptible of producing glass of ten feet width?

A. Yes, it was.

Q. Is that same thing true of Crystal City?

A. Yes, sir.

Q. Now, you have made a comparison, as I understood it, between the cost of producing glass at Kokomo as well as the cost of producing glass at Crystal City, did you not?

A. I did.

Q. Does that comparison indicate that in some instances on items of cost Kokomo is higher than Crystal City and in other instances that Crystal City has a higher cost than Kokomo?

A. In each year, 1928, 1929 and 1930, Kokomo's cost per foot is higher than that of Crystal City.

[fol. 725] Q. The question I asked is with respect to specific instances or specific items of cost, and the question is that in certain specific instances of items of cost isn't it a fact that in some such instances the cost at Kokomo is higher than the cost at Crystal City, and in other instances the cost at Crystal City is higher than Kokomo?

A. You mean in cost of materials and so forth?

Q. All the items. We are talking about specific items. There are some fifty odd items that you included in your comparison of costs, are there not?

A. I do not have a comparison between Kokomo plant and Crystal City plant, but I do have a comparison between the costs of various materials, between Works No. 1 at Creighton and the Kokomo and Crystal City plants combined, which shows what items cost more or less at the different plants, combining Kokomo and Crystal City.

Q. Well, does Form "A" show the costs of Kokomo and Crystal City for each item that you included in your comparison?

A. It does.

Q. Isn't it a fact, Mr. McHenry, that you are able to state from your cost records there before you that in specific items of cost which you have taken into consideration in your comparison Kokomo, in some of such items, is higher in cost than Crystal City and in other items Crystal City is higher in cost than Kokomo?

A. That is true.

Q. Now, in your comparison what figure did you take as the cost of these plants at Kokomo and Crystal City for comparison with the cost at Creighton?

A. I used the total cost for the year of Kokomo and Crystal City, using the average.

Q. Going back to this question of batch. What was the batch cost per thousand square feet at Creighton?

[fol. 726] A. The batch used in our quarter-inch glass was $13.17 per one thousand square feet of glass.

Q. And what was the batch cost at Kokomo?

A. $31.11 per one thousand feet.

Q. For making what?

A. Quarter-inch glass.

Q. And what was the batch cost at Crystal City?

A. $29.97 per one thousand feet.

Q. For making what?

A. Quarter-inch glass.

Q. And only quarter-inch glass?

A. Yes, sir; as we term it.

Q. Is that last addition to the answer some qualification to what went before it?

A. We classify it as one-fourth inch glass although, as stated before, it may be a sixteenth over a quarter or a sixteenth or sixty-fourth less than a quarter.

Q. Well, could it be an eighth over a quarter?

A. No.

Q. You are positive in your mind and you know this from your records that they never made any three-eighths inch glass at either Kokomo or Crystal City, and when I say "never" I am confining myself to the accounting period here.

A. Not during the accounting period.

Q. Now, take 1930. Will you now tell me what the batch cost per thousand square feet at Creighton was?

A. For what month?
Q. The first five months of 1930.

(Adjournment taken until 1.30 P. M.)

[fol. 727] 1.30 P. M.

Afternoon Session

C. L. McHenry resumes the stand.

Cross-examination (continued).

By Mr. O'Shea:

Q. (The two previous questions read to witness.)
A. The batch cost per thousand feet at Creighton for the first five months of 1930 was $20.60.
Q. And what was the batch cost per thousand square feet at Kokomo?
A. $29.80 per thousand feet.
Q. And what was the batch cost per thousand square feet at Crystal City?
A. $26.90.
Q. Now, can you give me the pounds used per square foot at Creighton in 1928?
A. 3.38 pounds per foot.
Q. And what was the pounds per square foot in Kokomo?
A. In the year 1928?
Q. Yes.
A. 7.78.
Q. And the pounds used per square foot at Crystal City?
A. 8.47.
Q. Now, can you give me the pounds used per square foot in the year 1930 at Creighton?
A. 4.5.
Q. And the same figure for 1930 at the Kokomo plant?
A. 7.2.
[fol. 728] Q. And the same figure for 1930 at the Crystal City plant?
A. 5.9.

* * * * * * *

Q. Now, Mr. McHenry, did you get the records to enable you to convert the sheets of pyralin, as given on Exhibit

"Q", for the months from October, 1929 and thereafter, to feetage?

A. Mr. Datz and I have looked into this matter and he has with him all the information pertaining to that conversion and can give it to you—all the information that we have.

Q. Are you able to state at this time whether the automobile manufacturers ordered three-sixteenth inch glass or one-fourth inch glass?

A. I am not able to state.

(Re-direct examination of Mr. McHenry deferred.)

PHILIP F. DATZ recalled.

Cross-examination (continued).

By Mr. O'Shea:

Q. Will you please convert the figures given under the heading "Sheets", as they appear on Defendant's Exhibit "Q", into feetage and confine that answer simply to the three months of 1929?

A. Do you mean how the computation was made, or do you want me to actually make the computation?

Q. Just convert them into feetage.

A. To convert these sheets shown on Exhibit "Q" into feetage it would be necessary for me to have the original papers showing the actual number of sheets and actual number of feet taken out of stock in the pyralin examination department. I can tell you how it was done.

[fol. 729] Q. When you say you can tell us how it was done do you mean by that you can tell us the feetage?

A. I can tell you the theory followed in getting the feetage into sheets.

Q. But you can't tell us the feetage?

A. No.

Q. Can you do it tomorrow?

A. If I can locate the original papers showing the pyralin figures taken out of stock, I can give it to you. It is a question whether it is at Creighton or not—the original record.

Q. At the present sitting, Mr. Datz, you are unable to

convert the figures given under the heading of "Sheets" in Exhibit "Q" to feetage. Is that correct?

A. That is correct.

C. L. McHenry resumes the stand.

Redirect examination.

By Mr. Christy:

Q. I did not intend to introduce these at this time, but some of your cross-examination has brought it up. I have here a number of sheets which illustrate the cutting of various contours of pyralin used by Duplate in its manufacture from the pyralin sheets as purchased. Was the information shown on these sheets compiled under your directions?

A. Yes, sir.

Mr. Christy: The sheets, nine in number, identified by the witness are offered in evidence as Defendant's Exhibit "S".

Q. And these show actual losses in cutting pyralin running as high as 66 per cent., do they not?

A. That is correct.

[fol. 730] Q. Just to illustrate one of your answers to Mr. O'Shea, on this first sheet we have three contours cut from one sheet of pyralin. There is still a loss of 28 per cent., is there not?

A. That is correct.

Q. Now, I have here three other sheets illustrating the cutting of contours of glass from the glass rectangles as furnished to you during the year 1928. Were these also prepared under your supervision?

A. They were.

Mr. Christy: The three sheets are offered in evidence as Defendant's Exhibit "T".

Q. Have you looked for and picked out at random a number of individual cases where there was actual loss of glass in cutting the contours for Duplate from the rectangular sheets from which the windshields were cut?

A. We have prepared a sheet which covers not only windshields but front doors, back lights, rear doors, and so forth, showing the actual loss in cutting.

Q. Is this list exhaustive or is it just taken at random?

A. This is just taken at random.

Q. And this list shows a loss of 7.22 per cent. Is that correct?

A. Yes, sir.

Q. And that is a real loss which you could not charge to your customer? Is that correct?

A. Yes, sir. That is the loss from cutting from the size purchased to the size sold to the customer.

Mr. Christy: The sheet last produced by the witness is offered in evidence and marked Defendant's Exhibit "U".

By Mr. Smith:

Q. Mr. McHenry, I refer you to the first page of Defendant's Exhibit "O". In your cross-examination by Mr. [fol. 731] O'Shea one of the items referred to was that item near the bottom of page 1, which is "Laminated Glass Loss in Polished Plate Feetage", in the year 1928 the amount being 1,235,545 square feet. Now, Mr. O'Shea called your attention to that item and then asked you about pyralin losses for the year 1928, and I understood you to say that you have no records to show the cutting loss of pyralin in 1928. Did you so testify?

A. I did.

Q. Did you mean from that that you have no records now or did you mean to say that you never had any records on the subject?

A. We never showed the pyralin cutting loss separate during that period.

Q. You don't show in these exhibits a separate pyralin loss in feet for 1928?

A. We do not. If we had the record, it would be shown on Exhibit "Q".

Q. Then I understand your testimony to be that you have records to show pyralin losses but not to show separately the cutting loss in pyralin. Is that the point?

A. That is right.

By Mr. Christy:

Q. You were asked by Mr. O'Shea to give the batch cost per thousand square feet of glass at Creighton, at Kokomo and at Crystal City, respectively, and you gave those figures. Is that correct?

A. It is.

Q. Now, what differences were there, if any, in the cost of materials of which those batches were made per unit of weight or any unit in which they were computed?

A. Batch materials during the year 1928 cost per one thousand pounds 7.79.

[fol. 732] Q. Where?

A. At Creighton. The average batch cost for the year 1928 of our factories at Kokomo and Crystal City cost 7.26 per one housand pounds, or a difference of 53 cents per one thousand pounds. Computed at the pounds used, it made a difference in money of $69,434.91, which would increase our amount claimed for use of patents above the 12 cents per foot.

Q. That is, the difference would have been greater?

A. Yes.

Recross-examination.

My Mr. O'Shea:

Q. Do I understand, Mr. McHenry, that these drawings which are marked in evidence as Defendant's Exhibits "S" and "T" constitute only typical examples of the cutting?

Yes, sir.

Q. There were a great many other cases where you didn't run up to such a high loss as is indicated on these two exhibits, "S" and "T"?

Yes, sir.

Q. Now, you gave a figure to Mr. Christy of $7.79 as being the cost per thousand pounds of batch material. Did you mean that or did you mean the cost per ton?

A. The cost per thousand pounds.

Q. And will you please give me the figures showing the method in which you arrived at that?

A. This price is per ton instead of one thousand pounds, as shown on Form "A".

By Mr. Christy:

Q. Well, in any event, Mr. McHenry, the cost of batch per unit was actually higher at Creighton during this

period than it was at Crystal City and at Kokomo. Is that correct?

A. It was.

[fol. 733] By Mr. O'Shea:

Q. You mean by that, Mr. McHenry, that it was higher at Creighton than the average of Crystal City and Kokomo?

A. Yes, sir.

ROBERT L. CLAUSE, a witness produced on behalf of defendants, having been previously duly sworn, testified as follows:

Direct examination.

By Mr. Christy:

Q. You have already testified in this case I believe, Mr. Clause?

A. Yes, sir.

Q. You have read some of Mr. McHenry's testimony and are aware of what he has said as to the difference between the cost of manufacture of quarter-inch plate glass by what we are calling your new methods of Creighton and the cost of manufacture of quarter-inch plate glass by the methods being used at Kokomo and at Crystal City during the period of this accounting, have you?

A. Yes, sir.

Q. Would it have been fair to attempt to make this comparison on the cost of manufacture of one-eighth-inch plate glass, and if not, why not?

A. It would not have been fair to make comparison between one-eighth-inch glass manufactured at the two places or between Creighton and the average at Works 9, Crystal City, and Works 8, Kokomo, for this reason: the operations at Kokomo and Crystal City were alike, so that when I speak of one I am including both, the plants being practically identical. While it is true we manufactured and sold one-eighth-inch glass from time to time before the intro-[fol. 734] duction of safety glass in automobiles, the cost of operation in the production of one-eighth-inch glass at either Crystal City or Kokomo was actually higher than the cost of producing quarter-inch glass. The equipment

at these plants was very heavy, and to produce eighth-inch glass with the equipment suitable for producing quarter-inch glass caused excessive shrinkage.

Q. Now, were your plants at Kokomo and at Crystal City with respect to which this comparison was made standard, efficient plants for the practice of the methods that were used there?

A. Up to the time that these plants were changed they were probably the best plants of their type in the United States. The process employed was known as the standard method of making plate glass, which was the same method as was employed abroad. Large sums of money had been spent to make these plants the last word for the type of plant which they were.

Q. You refer to these plants having been changed. When was that, approximately?

A. Works No. 9, Crystal City, was changed over in 1930 I believe.

Q. But both were operating in what you have called the standard operation during the times to which Mr. McHenry testified?

A. Yes, sir.

Q. Now, will you please describe this standard method of making plate glass which you say was used at Crystal City and at Kokomo and was also used abroad?

A. I would start with the furnace hall where the glass was melted from the batch of raw material. The furnace hall consists of individual furnaces which will hold pots or crucibles, in number from twelve to twenty. The crucibles employed will hold approximately a ton of molten glass each. These plants had about sixteen furnaces apiece. The operation in the furnace hall was one of bringing pre-[fol. 735] pared batch to the furnace and filling the pots by labor with a ladle. To get the pot full required the putting in of three fills. After the pot was filled the temperature of the furnace was raised and the batch melted. Following the melting operation, temperature was held at still a high temperature and the glass was refined. After the refining period the temperature of the glass was lowered to approximately 2000 degrees, where the pot was held until the whole mass had cooled down to approximately this temperature when it was ready to be cast. This melting operation or cycle from the time the pot is put in until it is put in again

after casting requires from twenty-four to forty-eight hours, depending on the quality of metal produced. When the pot is ready to be cast it is taken out of the furnace by means of a crane and a large tongs and conveyed to what was known as the casting table. Here another crane took the pot and dumped it on the table. Along the side of the table were trams which determined the thickness of the rough plate desired. A roller was then passed over the molten mass of metal and a sheet was formed which contained about 350 square feet of rough glass. This plate was then shoved off of the casting table into ovens and after passing over five ovens, remaining on each oven approximately seven minutes, it was passed onto a leer. These leers were about 650 feet long, and in the course of traveling through the leer the glass plate was cooled down to room temperature, or approximately so. When the plate emerged from the cold end of the leer it was then examined and cut up into sizes suitable for the laying in the grinding and polishing operation.

Q. You say this glass was poured out of the individual pot, about a ton of it, in molten or highly plastic state, and was then rolled out by a roller, just as a cook rolls her dough. Is that correct?

[fol. 736] A. That is correct.

Q. And these trams that you spoke of were slightly elevated tracks on opposite sides of the table on which the roller would rest and so would define the thickness of the sheet. Is that right?

A. Yes, sir.

Q. And when you wanted to produce finished plate glass of a thickness of one-fourth of an inch, what was the thickness of the plate that you rolled to produce that sheet?

A. Well, we referred to the thickness of the plate as being 28/64th of an inch but, as a matter of fact, a variation from plate to plate caused some plates to be considerably thicker than that. If a pot of metal was rather stiff at the time it was cast, the roller which rolled it out would be cushioned by the mass of metal and would actually not fit down on the trams; so that at times or in places in the plate we would have sections thicker than the thickness of the trams.

Q. By the way, how heavy was this roller that rolled the plates? Give us some general idea.

A. I would guess twenty tons.

Q. And it was metallic, of course?

A. Cast iron.

Q. And the surface of the table was what?

A. The whole table was cast iron—heavy sections of cast iron.

Q. Then, what was the appearance of the rough plate? That is, both as regards evenness and as regards transparency?

A. The plate as it was drawn from the end of the leer was quite opaque, had quite a rough surface due to its contact on the bottom with the ovens—the stones in the bottom of the oven—and its contact with the rods which carried it through the leer. The top surface had a file-like appearance, which it took up from the knurling of the roll, and [fol. 737] had what we call cockles all over it, which are caused by the contraction of the plate in cooling down.

Q. What are cockles?

A. These cockles are unevenness of the surface due to contraction which is not uniform over the plate.

Q. You might say generally the surfaces of the plate were wavy?

A. Yes, sir.

Q. Now, please proceed and describe the grinding and the reduction of the plate to the finished size.

A. The grinding operation in this style of plant was carried on in individual machines. A machine was made up of a table which revolved on a spindle. These tables measured thirty-six feet in diameter. They were made of heavy sections of cast iron and were mounted on four wheels so that they could be conveyed about the plant on their own wheels on tracks prepared for that purpose. Over this table and spindle were mounted two very large and heavy grinding runners, the largest of which extended past the center of the table and over the outside edge of the table; the smaller one extending over the outside edge of the table and coming up to the center of the table to meet the first runner without actually touching it. The largest of these runners was approximately twenty-one or twenty-two feet in diameter. These runners were large cast-iron discs on which a facing of two-inch planking was secured to which heavy cast-iron blocks were fastened which came in contact with the surface of the glass and did the grinding when

sand and water was applied as an abrasive. These tables on the spindle were rotated at approximately twenty revolutions per minute and the drag of the runners on the surface caused the runners to rotate and do the grinding. Sand and water in a coarse state was first applied and after the surface of the glass was faced successively finer grades of sand followed, and finally an application of very [fol. 738] fine emery, bringing the surface down to what we termed "a smooth."

Q. Now, we will stop there a moment, please, Mr. Clause, and tell us how the glass sheets were secured to the face of the table in order to be ground.

A. I mentioned that these tables could be transported from the machine to various points in the factory. I perhaps should have started with one of these tables in the laying yard where the rough glass was taken from the leer mouth, laid on these tables by means of plaster and water and secured on the table with the plaster and the aid of pegs around the edge of the table; these pegs being driven into holes bored through the cast-iron top. This plaster requires about twenty minutes to set before it is possible to grind off the face of the glass.

Q. And, as I understand it, the sheets of glass which you say had been cut up to the proper size at the end of the leer were laid in plaster over the surface of this table with smaller sheets filling in around the edges and distributed all over it. Is that correct?

A. Yes, sir.

Q. And then, as you have described, the table was taken to the machine and whirled around under these runners, which rested on the glass, and by the aid of the sand and water abrasive the glass was gradually ground down to the smooth surface. Is that it?

A. Yes, sir.

Q. And how was the sand and water supplied to the table during the grinding operation?

A. Sand and water was supplied in a liquid form from a grading tank adjacent to the machine.

Q. And about how many different grades of sand were supplied?

A. About ten.

Q. In succession?

A. Yes, sir.

[fol. 739] Q. Gradually getting finer?

A. Yes, sir.

Q. And in between these steps was it necessary to wash off each coarser grade before you used the next finer one?

A. Yes, sir.

Q. State whether or not in this grinding or facing operation there were any losses of good glass.

A. It would be the exception rather than the rule if a table was faced without some breakage, due to the weight of the runners coming down on the uneven surface of the glass, and with poor conditions as regards the condition of the glass laid or the condition of the plaster at the time it was laid, it was not uncommon to have all the glass on the table leave the machine. The men operating these machines were guarded against such a happening by a heavy concrete wall about the machine and heavy gates at the point the table was introduced to the machine.

Q. Do I understand it was not uncommon for the glass to be stripped and thrown off the machine, as you might say?

A. That often occurred.

Q. Now, following the smoothing operation, where you have what you called the smooth, following the application of emery, what was done next?

A. The table was removed from the machine, transported to a department known as the jointing yard, where men would remove all the plaster in the joints between the plates and refill the joints with fresh plaster. The table was then conveyed to a polisher machine, which in appearance and construction below the floor was similar to the grinding machine but instead of having grinding runners over the table, four polisher runners were mounted. These were large spindle-like discs on which were mounted polisher blocks which were covered with felt which put on [fol. 740] the polishing effect when rouge was applied to the table. These machines ran at approximately the same speed as the grinders, and the polishing operation required from an hour and a quarter to an hour and a half to complete.

Q. I forgot to ask you the length of time required for the grinding.

A. The grinding operation required about fifty minutes to an hour.

Q. Now, we have one face of the glass ground and polished, or I believe it was called the side of the glass. What was done next?

A. The table was then removed from the polishing machine, taken to a department known as the turn-over yard, where with labor and cranes all the glass was stripped from the surface of the table, set aside, the plaster cleaned from the surface of the table, a new bed of plaster applied and the glass relaid with the polished side down. After permitting the new plaster to set, the second side operation was similar to the first side operation.

Q. First grinding and then polishing?

A. Yes, sir.

Q. And if we start with a cast rough plate, as you say, from twenty-eight sixty-fourths to thirty-two sixty-fourths in thickness, in order to produce a finished quarter-inch plate, you ground off about one-eighth of an inch from each face of the glass. Is that correct?

A. Yes, sir.

Q. About when was your Creighton plant started?

A. The first unit or grinding and polishing department was started in the summer of 1924.

Q. I suppose this Creighton operation did not commence as a completely finished operation, and I will therefore ask you to give in a general way the history of the [fol. 741] development of the operation as it existed at the date of this accounting period.

A. That would be 1928?

Q. Yes. The history and development down to that point.

A. Up to the year 1928?

Q. Yes—the development.

A. The Creighton operation comprises two main developments: the development of our tank operation, which supplies the rough glass for the grinding and polishing department, and then the development of the grinding and polishing department. The first major experiment on the tank development was in operation in the fall of 1921. This experiment was carried on at Creighton and had sufficient promise to warrant the company to build a full sized tank, rolling machine and leer at Works No. 5, Ford City. That plant has since been demolished. That operation was started in August, 1922, and except for details of

construction is exactly the way the operation is being carried on at Creighton today. During the period from the time of the experiment referred to in 1921 to the success of the operation carried on at Works No. 5, Ford City, developments on the continuous grinding and polishing were being conducted by our laboratory and when the decision was reached to build the Creighton plant—I would say early in 1921—the tank operation was well developed and the grinding and polishing machine was well under way.

Q. In 1921 you say?

A. Yes, that occurred prior to the building of the tank at Creighton, which was first put in operation in the last part of 1923. In other words, in the building of the Creighton operation, the tank was built and put into operation slightly before the grinding and polishing unit was completed and put in operation.

[fol. 742] Q. Yes, but you used the year 1921 there. I thought you made a mistake.

A. It might have been 1922. I think that covers the development.

Q. And do I correctly understand that the Creighton plant was completed in 1924?

A. Yes, sir. Let me correct that answer. The Creighton plant consists of two units; the first unit, consisting of one tank and one G. & P. unit, was in operation in the summer of 1924.

By Mr. Smith:

Q. What is a G. & P. unit?

A. Grinding and polishing.

By Mr. Christy:

Q. Now, please start with the operation of melting the glass and forming the glass sheet, and describe the Creighton operation as it existed in the years 1928, 1929 and 1930.

A. In contrast to the furnace hall of the old style plant, the Creighton operation employs what is known as a glass melting tank. This is a large box-like structure built of refractory blocks. The tanks we employ are from twenty-seven to thirty feet wide and approximately 130 feet long, allowing for a depth of five feet of metal in the tank. The

superstructure over the tank affords means of introducing the ports through which the flame is introduced for the melting.

Q. What is the capacity of those tanks?

A. These tanks hold about 1200 or 1500 tons of molten glass. The refractory blocks which are used to build this tank are oblong blocks, and are a foot thick as laid up on the wall. I mention this because these refractories are in contrast with the expensive pots used in connection with the furnace operation of the old process. At one end of this tank the raw batch is fed in and the tank is so con- [fol. 743] structed that the batch is melted, and at the other end of the tank molten glass can be withdrawn. The process we employ uses two rollers which fit up to the end of the tank below the surface of the glass in the tank and the glass which is fed through a slot to the rollers is reduced in thickness continuously and formed into a continuously forward moving ribbon which passes through a roller leer and is brought from a plastic state down to room temperature in a distance of about 350 feet.

Q. And this glass ribbon is formed continuously I understand?

A. Yes, sir. The operation goes on for from six weeks to three months' time without stopping.

Q. And about how fast is it formed—the ribbon?

A. Quarter-inch glass is rolled at about 80 inches a minute.

Q. And what is the width of the sheet produced?

A. The width of the sheet is about 78 inches, and we cut from it a sheet 74 inches.

Q. And the rolls are horizontal rolls and the sheet is formed between them, I suppose?

A. Yes, sir.

Q. The upper roll defining the upper surface of the ribbon and the lower roll defining the lower surface?

A. Yes, sir.

Q. And what serves to feed the molten glass into the pass between the rolls?

A. We have a refractory shape which we call the lip or slot which allows a mass of glass, approximately four inches thick and the approximate length of the rolls, to come in contact with the surfaces of the rolls.

Q. I meant under what force is the glass supplied to the rolls?

A. Under the head pressure of the metal within the tank.

Q. That is, the rolls are below the glass surface?

[fol. 744] A. Yes, sir.

Q. Now, in producing quarter-inch finished plate glass in this operation, about how thick is the ribbon produced by the rolls?

A. Between eighteen and nineteen-sixty-fourths of an inch.

Q. So that on each face there is an excess to grind off of about a thirty-second of an inch. Is that correct?

A. Yes, sir.

Q. What is the appearance of the surface of the sheet in the sheet as a whole?

A. The sheet as it emerges from the end of the leer is slightly opaque, but has a rather silvery, satiny appearance; very smooth and very flat.

Q. It is much smoother, I take it, than was the surface of the sheet produced on the roller table in the old practice?

A. Infinitely so.

Q. Now, will you proceed to describe the operation of grinding and polishing the glass produced in this Creighton rolling operation?

A. We might first say that as the glass emerges from the end of the leer it is cut off in sections of the proper length to be ground and polished. The grinding and polishing unit is really one huge machine made up of grinding and polishing units or heads, as we call them. It is installed in a long building about eleven or twelve hundred feet in length, through which pass four tracks for the full length, except at the extreme ends of the building are transverse tracks which I will describe later. The two center tracks of these four are known as the work tracks. On these tracks are mounted cast-iron tables which abut quite perfectly and are fastened together with a coupling device, making the joint for the time being practically rigid. The two center tracks are solidly filled with tables and these can be pro-

[fol. 745] pelled by a driving mechanism at any desired rate. These tables are about 75 inches wide and 11 feet long, and the glass cut at the end of the leer is cut such a size that we can lay one plate on each table or, if desired, we can lay longer plates across two tables. These plates are laid on the table using plaster, as in the old operation, but due to the flatness of the glass a very small quantity of plaster is required and there is no plaster required

around the border, as in the case of fitting square plates to round tables. Over these strings of tables are mounted the individual grinding machines and individual polishing machines referred to as heads. The two work tracks are divided into what we call the first side grinding operation and polishing operation and the second side grinding operation and polishing operation. As the glass on the table proceeds with the travel of the tables, it passes under a series of grinder runners and then under a series of polishing runners, so that when it arrives at the other end of the building the glass first laid has the upper surface ground and polished. By means of a transfer car traveling on the transverse track referred to at the end of the building, the individual tables are disengaged from the string of tables and moved to the return tracks—the other two tracks referred to—and sent to the other end of the building. Glass which has had one side ground and polished is then raised, turned over and relaid by crane and it enters the second work track. When that particular table reaches the other end of the building it has had its second side ground and polished and the transfer car again disengages it from the ribbon and puts it on the second return track. At this point the finished plate of glass is removed and passed on to the wash house and wareroom. The table then returns to the other end of the plant where it is ready to go through the operation a second time.

[ol. 746] Q. So that in operation you have being performed simultaneously the grinding and polishing of one side of one set of sheets and the grinding and polishing of the other side of the other set. Is that correct?

A. Yes, sir.

Q. Now, confining ourselves first to the grinding operation, because you have spoken of that last, what have you to say as to the saving in labor and materials in the operation as carried on at Creighton as compared with the old grinding and polishing operation as carried on at Kokomo and Crystal City?

A. It is very material.

Q. Why is it?

A. Having one gigantic machine requires only a fraction of the labor to attend it as is required in the individual machine employed in the old operation, and because of the physical condition of the sheet of glass supplied to the grinding operation, very much less glass has to be removed

and there is no superfluous glass around the edge of the table on which you are wasting power and materials to remove it. Due to the improved surface of the glass, the power consumption is materially less in this operation than in the old one.

Q. How about breakage of the glass in grinding?

A. Breakage in the grinding and polishing of this operation is comparatively negligible.

Q. Is there any difference in time between the two operations—grinding and polishing?

A. There is a little difference in time in the polishing operation, but it is a strange fact that polishing of glass requires about the same length of time in any operation that you can develop or has been developed up to date, due to the fact you are limited as to the heat you could apply through friction and so forth.

Q. I would have thought there would have been saving in the grinding time.

[fol. 747] A. There isn't a saving in time but in the amount of effort, because the time is determined by the speed of polishing or the speed of travel of the table.

Q. Now, coming to the melting of the glass and forming of the rough sheet, what have you to say as to saving in operating expenses there as to labor, material, fuel and so forth?

A. The attention required by a tank is very much less than that required by individual furnaces. The fuel required to melt a thousand pounds of batch in a tank is considerably less than required in the case of furnaces.

Q. Pot furnaces?

A. Pot furnaces. And, of course, the batch required to produce a square foot of rough plate of this thickness is much less than required to produce a square foot of rough glass by the old process for the same purpose, due to the difference in thickness of the rough glass required.

Q. In your old pot operation, as you have described it at Kokomo and at Crystal City, about how long would a melting pot last?

A. Sixteen melts was considered a good average life for a pot.

Q. And what did you have to do at those plants as regards the building of pots or procuring of pots?

A. We manufactured our own pots.

Q. You had a department for that purpose?

A. A department known as the pot house.

Q. How many pots did you make and keep on hand?

A. We used approximately 250 pots a month, and we kept on hand a stock of pots numbering 1500 to 2000.

Q. How much did those pots cost?

A. About $60 apiece.

Q. Now, Mr. McHenry in his testimony based upon the plant accounts has stated specifically that there was a sav-
[fol. 748] ing in the manufacture of plate glass by your Creighton operation, as compared with the average cost of manufacture at Kokomo and Crystal City, in specific figures of 12.474 cents per square foot of polished quarter-inch glass in the year 1928; of 9.907 cents per square foot in the year 1929, and of 9.694 cents in the year 1930. In your opinion, as a practical glass-manufacturer, is that a fair statement of the amount of saving which you would expect to find due solely to the differences between these two processes?

A. Yes, sir, it is.

Q. Now, of course, we have to do here with the manufacture of eighth-inch glass at Creighton. Speaking again as a practical glass manufacturer, familiar with the Creighton operation, is there any difference between the manufacture of one-eighth-inch glass at Creighton and the manufacture of quarter-inch glass at Creighton which would work any material change in the relative saving in the manufacture of eighth-inch as compared with quarter-inch?

A. The only possible difference can come into play through the difference in thickness of the rough glass used.

Q. Which would make quarter-inch glass cost a little more?

A. Yes, sir.

Q. How much would that amount to per square foot in your opinion as a skilled manufacturer?

A. It is so small an amount I would hate to give an answer to that without actually getting the figures.

Q. Less than a cent a square foot, do you think?

A. Yes, sir.

Q. State whether or not, in your opinion as a skilled glass manufacturer, it is fair for purposes of determining saving due to the Creighton process in the manufacture of eighth-inch glass to compare the manufacture of quarter-

[fol. 749] inch glass by the Creighton process and by the older process respectively.

A. I think that is fair.

Q. Now, referring to this Creighton system as used in 1928, 1929 and 1930, do you know whether or not as developed by you, as you have already testified, that system has been covered by patents?

A. The company holds many patents covering phases of the operation.

Q. Are you familiar with these patents?

A. Very familiar with them.

Q. How did you happen to become familiar with them?

A. I am chairman of the plate glass manufacturing department and the patent committee which was formed some years ago comes under my supervision. Any developments that are patentable are reviewed by the patent committee and after an application is ready for filing it is again reviewed by the patent committee before application for patent is made.

Q. So that you have to do with the matter of inventions and improvements, both from the point of view of obtaining patents for them and from the point of view of their actual development and practical use, have you?

A. Yes, sir.

Q. In a general way, what lines of development are covered by these patents, meaning of course the patents which relate to the Creighton operation?

A. We have two groups of patents covering the Creighton operation: one applying to the formation of the sheet and the second group applying to the surfacing or polishing of the sheet.

Q. That is, the two operations into which you have divided the manufacture already?

A. Yes, sir.

[fol. 750] Q. Can you give a list of the patents owned by the company pertaining to this operation at Creighton which fall in these respective groups?

A. I have here collected such a list of patents, which are not all the patents that the company holds on this operation but which I consider the more important ones. The list is as follows:

Formation of Sheet

Evans	No. 1,519,244	December	16, 1924
Gelstharp	No. 1,560,078	November	3, 1925
Gelstharp	No. 1,560,079	November	3, 1925
Fox	No. 1,569,082	January	12, 1926
Owen	No. 1,569,134	January	12, 1926
Koupal	No. 1,576,516	March	12, 1926
Oakes	No. 1,580,156	April	13, 1926
Core	No. 1,583,779	May	11, 1926
Hitchcock	No. 1,598,721	September	7, 1926
Rotherman and Evans	No. 1,622,346	March	29, 1927
Hitchcock	No. 1,657,212	January	24, 1928

Surfacing of Sheet

Heichert	No. 1,519,256	December	16, 1924
Fox	No. 1,554,804	September	22, 1925
Evans	No. 1,569,079	January	12, 1926
Evans	No. 1,577,457	March	23, 1926b
Soderberg	No. 1,580,175	April	13, 1926
Evans	No. 1,598,763	September	7, 1926
Fox & Evans	No. 1,610,366	December	14, 1926
Heichert and Evans	No. 1,610,374	December	14, 1926
Hitchcock	No. 1,629,502	May	24, 1927
Harrington	No. 1,631,126	June	7, 1927
Evans	No. 1,657,206	January	24, 1928
Fox	No. 1,660,330	February	28, 1928
Harrington	No. 1,671,718	May	28, 1928
Fox	No. 1,683,342	September	4, 1928
Hitchcock	No. 1,771,408	July	29, 1930

[fol. 751] Mr. Christy: Defendant's counsel produces a set of copies of the patents above listed and they are marked collectively as Defendant's Exhibit "V."

Q. Now, there are listed here twenty-six patents, copies of which have been offered in evidence. Please state whether or not the subject matter or essential parts of the subject matter of each of these patents were being actually used at Creighton during the period 1928 to 1930.

A. They were all being used during that period.

Q. Now, listed under the heading of "Formation of Sheet" there are eleven patents. Would you mind stating whether there is any one of these which you consider as a

fundamental or more important one pertaining to this particular branch of the subject?

A. Without posing as to the legal side of the patent, the Gelstharp Patent, No. 1,560,079 is the most important patent in this group.

Q. Why do you think that is true?

A. This is the patent covering the fundamental idea of the method employed in the formation of our rough sheet on converting the molten glass into a sheet of rough glass.

Q. And what do you understand to be the outstanding features of the method described in that particular patent?

A. Well, I have already described the process of forming a sheet in the rough way, where the glass is removed from the tank by a pair of rolls under the head pressure of the tank. That is one of the major claims in this patent and one which is essential to the operation. We have never been able to produce a satisfactory sheet when we vary from this principle as applied by this operation. Another important part of the operation as disclosed in this [fol. 752] patent is conveying the sheet from the time it is formed into and through the leer on rollers and flattening it at the same time.

Q. Has the latter a great advantage in your opinion?

A. It is the essence of our success.

Q. Elaborate that a little bit, Mr. Clause. Let me know what you mean by "flattening".

A. Are you referring to how it is done?

Q. Yes, how it is done and what is the importance of it. Point out how it differs from other methods in annealing the sheet.

A. Up to the development of this particular operation I do not believe glass had ever been flattened in a roller leer. Up to this time it had always been flattened on ovens referred to in my description of the old style plant, and after it was of sufficient stiffness to be conveyed was shoved off of these ovens onto a rod leer which invariably left marks or ridges in the glass. This process takes the glass sheet as it emerges from the pair of forming rolls and conveys it on a roll conveyor, a conveyor made up of individual rolls, and carries it through the flattening stage and on through the leer. During the flattening operation heat is applied to the sheet, which is already more or less plastic, and the action in going over the rolls reduces it to a very, very flat surface.

Q. That is, the tendency of the sheet to warp in cooling is completely done away with?

A. Yes, sir.

Q. And you get a perfectly flat sheet at the exit in the leer?

A. Yes, sir.

Q. Is it a matter of great importance to have a perfectly flat sheet?

A. The flatter the sheet the less there is to grind off and the less breakage you have in the grinding and polishing operation.

[fol. 753] Q. Now, Mr. Clause, I want to go through these other patents listed under the title of "Formation of Sheet". If you prefer, I will put a question as to each individual patent, or, if you like, I would be glad if you would take them up in order and point out the essential feature of each which is actually used to advantage at Creighton.

A. If agreeable, I would just as soon go through them, taking up one at a time. I will take them up in the order in which they are disclosed on the sheet submitted. These patents are included in the group known as the "Formation of the Sheet."

The first one is the Evans Patent, No. 1,519,244. To describe the importance of this patent I will have to go back and enlarge a little on what takes place in the case of a repair in a tank, or to any repair which causes a shutting down of the rolling operation. When one of these tanks is rebuilt, which has to take place from time to time, it is cooled down, and before being put in operation again is heated up. The cooling down and heating up operation causes rather severe expansion of the materials built into the tank and it does not stand still but moves quite a considerable distance—maybe as much as nine inches. The rolls which form a sheet are mounted on a carriage, which is rolled away from the front of the tank at the time of one of these repairs. If the carriage is of a fixed length, it might so happen that in putting it back after a repair it would be too large for the space required. The device shown on this Evans patent permits adjustment of that section of the roller leer, which we call at this point the apron, to bridge over the distance between the forming rolls and the permanent section of the roller leer and take up the difference in space due to the expansions cited. Considerable of our flattening is done on this apron, or on

this section of the roller leer, and it is quite essential that [fol. 754] the rolls be equally spaced. When the rolling carriage is put into place it is desirable that it be put in as quickly as possible and this mechanical development permits that this may be done without delay, and at the same time provides an automatic feature that the rolls be equally spaced regardless of what the space is between the tank and the leer proper. I think that covers the important function of that patent.

The next patent on the list is Gelstharp, No. 1,560,078. This is without a doubt one of our important patents as far as the success of the operation is concerned. While this patent covers a number of features, by far the most important one, the one which I will cite, has to do with the so called heated gun. I have described that the glass in the tank is supplied to the rolls through a refractory lip or slot. The heated gun is a metallic section which fits into the triangle between the rolls and the lip and defines the width of the glass as it is supplied to the pair of rolls. Our early operations employed a clay piece at this point. Under those conditions the glass naturally was hotter at the middle of the plate than it was at the edges, and the sheet formed by the forming rolls would emerge with cold edges and relatively hot center of the sheet. This caused a warping of the sheet and at the same time the edges which were dragged off of these clay pieces were ragged. Being colder than the center of the sheet and in a ragged condition, vents would start and the sheet was constantly broken as it passed through the leer. The heated gun replaces these clay pieces, and being internally fired and intensely hot, it supplies heat to the edge of the glass where needed and as a result the sheet is formed in a more nearly uniform condition in regard to temperature and a beautifully rounded edge results from the presence of the heated gun.

[fol. 755] Q. Just a minute, Mr. Clause. You spoke of fire cracks forming in the edge of the sheet when you used the clay gun at first and, consequently, breakage of glass in the leer, if I understood you. Did the heated gun do away with that condition?

A. Entirely so.

Q. Now proceed.

The next patent, Gelstharp, No. 1,560,079, is the fundamental patent on the formation of sheet already passed on.

The next patent, Fox, No. 1,569,082. In the operation of this particular tank process it is found essential to have an adjustable apron to meet the varying conditions of the glass sheet as it emerges from the pair of forming rolls. This patent covers the mechanism which permits this adjustment, together with a necessity of removing it quickly in the event it is found necessary to stop the sheet as it progresses onto the apron, and permits the dropping of the entire sheet into the basement of the building. When conditions are ripe and you wish again to put the plate through the leer, this section of the apron is quickly put into place and the operation goes on normally.

The next patent, Owen, No. 1,569,134. This patent is of vital importance in the success of our operation. It is perfectly evident that when you remove glass from a tank under the head pressure of the glass that there must be a means of shutting it off before it goes into the rolls, and the natural way to do this is with a gate. Originally, in our operation, a large clay gate or shear cake was used. When this clay shear cake was lowered into the glass to shut off the flow it might or might not fit snugly with the sill on which it was to rest and leakage occurred around it. To complete the actual shutting off of the flow of glass means had to be taken to chill the molten glass on the roll side of the gate and finally the flow of glass was stopped and [fol. 756] the operation could then be closed down. It was found on restarting the operation that it was sometimes almost impossible to raise the clay gate because it had frozen to the bottom of the tank and often when removed large pieces of the clay gate would be adhered to the sill on which it had rested. This in time would throw loose and often pass through the rolls, completely spoiling them. This invention relates to a water cooled shear cake made of steel. Regardless of whether it fits tightly on the sill when lowered, being water cooled, it soon chills, the glass around about it and shuts off the flow. It is also found very easy to raise the gate because it has not adhered to anything, as was the case in the clay gate, and the operation can be resumed without handicap.

Q. What are the occasions for the use of this gate while the furnace is running?

A. It is brought into play at any time it is necessary to stop the operation. The clay slot or lips referred to have to be removed from time to time and a new one inserted.

For a failure for any reason, either in the leer or in the rolling device, it is essential to stop the operation as soon as possible. It is also necessary to shut down about every three months to make a repair to the tank.

The next patent, Koupal, No. 1,576,516. This patent refers to leer control. At the beginning of our operation we had great difficulty in maintaining a sheet that would not break in the leer. This patent covers a control method which completely prevents the type of breakage I refer to, and at the same time gives the organization an opportunity to control the relative temperature, top and bottom, of the plate so that there is no warpage resulting from cooling the plate down. Before the introduction of this patent principle it was not uncommon to have a plate split in the middle and the split went on for a day at a time. [fol. 757] By the adjustment of the burners as shown, it is possible to regulate the temperature at the edges of the plate with relation to the center so that such a split, if it should occur, can be stopped very readily.

Oakes Patent No. 1,580,156. This patent refers to an operation given the term of "flushing." It permits the quick raising of the top roll of the two forming rolls. As our rolling operation goes on it is not uncommon for stagnant glass to collect behind the rolls, which is rolled around at that point and apparently is not able to get through into the sheet and, in a sense, clean this space out continuously. By the quick raising of the top roll a thick wad of glass is permitted to come through, which completely washes out the section referred to, and the roll is again lowered into place and the operation goes on uninterrupted. Before this device was installed in our operation attempts were made to go in from the side and rake out this section of molten glass, but rather unsuccessfully. Immediately following the function of flushing, in the event that the quality has been poor, it is materially improved.

Next patent, Core, No. 1,583,779. It is not uncommon to have the forming rolls warp at the time the operation is started. There is a terrific temperature shock to the forming rolls as the molten mass of glass first comes in contact with them. It is not uncommon for the forming rolls to warp from other causes, such as failure of water and so forth. In the event that the rolls do warp, and both warp approximately the same amount, it is possible to con-

tinue to form a sheet of uniform thickness by getting the warpage parallel. This mechanism permits the operators to change the relative rotation of one roll with regard to the other, so that they can get the warpage at parallel and continue the operation without changing the rolls.

[fol. 758] Next patent, Hitchcock, No. 1,598,721. I have just referred to the trouble with warped forming rolls. We consider this patent as one which is very essential to the success of our operation because it covers the first principle introduced to in part solve the difficulty of having roll warpage. This patent discloses the idea of introducing the water to the center of the roll and at the same time conveying it back and taking it out at the ends in such a fashion that the roll will be kept at a uniform temperature throughout. Up to the time this improvement was made in the construction of our rolls, it was often necessary to change rolls as often as every week, and at one stage of the development of our operation it was almost impossible for our shop to manufacture rolls at as fast a rate as they were being destroyed in the tank department. I lay emphasis on the importance of this patent because the accuracy of the rolls determines the accuracy of the plate formed, and the whole operation from this point on is dependent in a large measure on the accuracy of the plate.

Q. Mr. Clause, at this point—your rolls are normally hotter at the center than they are at the ends, are they?

A. The sheet is; so that you want your roll cooler at the middle than at your ends.

The next patent, Rotheram and Evans, No. 1,622,346. I have referred to the refractory lips or slot which forms the passageway for the glass between the tank and the rolls. While this is a huge piece of refractory, it is delicate in its shape and is subjected to severe shock when the molten glass comes in contact with it, which tends to cause it to warp or bow. While this piece of refractory is the connecting link between the tank and the rolls, it is essential that it be in close contact with the rolls and at the same time dare not touch the rolls—otherwise they become ruined.

[fol. 759] The problem of handling such a piece of refractory and supporting it is apparent. Before the water cooled structure disclosed in this patent was introduced, great difficulty was experienced in maintaining the alignment of

the refractory lips, and without this alignment unsatisfactory conditions result in a sheet of glass.

Next patent, Hitchcock, No. 1,657,212. This patent again refers to forming rolls and is an exact showing of the rolls employed in our operation. The importance of straight rolls has been brought out and the principle of introducing the water to the center of the roll was brought out in an earlier patent. This supplies the greatest cooling at the point where the greatest cooling is required. This patent starts with that principle and carries forward the improvement in maintaining a straight roll, and at the same time giving us a roll which does not permit the formation of air pockets or steam pockets within the water-cooled area. The water in this case is not only supplied to the center of the roll but is supplied to that point through an insulated tube which carries it to this point in a colder state. The question of a uniform temperature roll is most essential. Without a development such as shown in this patent, rolls have hot spots which at times become so severe that the roll will actually adhere to the glass or, if not that severe, will produce a sheet which is ununiform in temperature and, as a result, will not become flat.

Q. Now, will you proceed to discuss as you have done already the further patents which have to do with the surfacing of the sheet?

A. The first patent on the list is Heichert, No. 1,519,256. This patent discloses the means we employ for the handling and turning over of our glass in the Creighton grinding and polishing operation. It is comprised of a crane on which is mounted a vacuum raising frame. On the crane is [fol. 760] mounted what we term as a "hair pin," which is the turnover device. It is so arranged that the crane can pick up a plate of glass from a table on the return track, put it in the hair pin, leave it there. The operator on the crane can cause the hair pin to rotate for 180 degrees, thus turning the glass over. With the glass turned over, he then moves the vacuum frame up to the plate of glass, removes it from the hair pin and lays it on a table on the work track. The tables on the work track are constantly moving. By manipulation of his crane on which all of this apparatus is mounted, he is able to move the crane along at the rate of movement of the tables and lay the plate of glass. With this apparatus one man is able to do three functions—raise the glass from one table, turn it over,

and relay it on the new table. This particular turnover device handles glass with practically no breakage. From a labor standpoint, this is a very important piece of mechanism.

The next patent, Fox, 1,554,804. This patent shows the actual layout of one of our Creighton G. & P. units, together with its relationship to the glass as it emerges from the end of the leer. It covers the plant layout as I have described it briefly, where four tracks run the full length of the grinding and polishing unit, the two center ones being the work tracks and the two outside ones being the return tracks, with the two transverse tracks at the end of the building on which are mounted the transfer cars which handle the grinding and polishing tables as they come through the machine. It permits the consolidation of the grinding equipment at one end of the plant and the polishing equipment at the other end of the plant, which facilitates the feeding of the abrasive to the grinding machines from one central grading outfit. The same thought is carried out in supplying the polishing medium to polishing machines. Due to the simplicity of this layout considerable [fol. 761] is saved in investment through the construction which carries the grinding and polishing equipment. In other words, the same structure which carries one set of machines carries both sets of machines. Having machines consolidated through the center of the building permits the ready access to these machines by the overhead cranes which from time to time must remove them and replace them. It also provides for a convenient method of supplying the glass from the leer mouth to the grinding and polishing unit when required, or passing it on to stock when it is necessary to put glass to stock made in excess of that required by the grinding and polishing unit. From the standpoint of economy of operation, we consider this layout ideal.

Next patent, Evans, No. 1,569,079. This patent covers the mechanism employed between the end of our leer and the grinding and polishing department. As the glass emerges from the end of the leer it is cut off in sections, and it is apparent that where the glass is coming out at a constant rate the section must be moved forward at a rate faster than the travel of the ribbon to get it out of the way, and this mechanism provides a means of snapping the glass and taking it forward at a rapid rate where it is possible

to pass it on to the other tables where the edges are trimmed and from that point it is passed on to the grinding and polishing department.

Next patent, Evans, No. 1,577,457. In discussing this patent I would like to include Evans, No. 1,598,763. These two patents together cover the type of grinding and polishing machine already referred to as heads and the method of supporting them. This is one of our important patents as applied to the grinding and polishing department. In the operation of such a department it is necessary to quite frequently remove the grinding and polishing heads from [fol. 762] the machine. Grinding heads have to be taken off to have the runners replated with cast-iron blocks and they also are removed from one position to another as the grinding blocks wear down. In the polishing department it is absolutely essential to remove the polishing blocks from time to time and scrape off the excess rouge to keep the felt in such shape that it will polish. This construction permits the removal of these machines by the crane for this purpose or any other purpose. When a repair is necessary to any one of these heads the crane removes it and immediately it puts in its place another head which is standing ready to go into operation. The same means of support which permits the ready removal of this head also supplies the adjustable feature which is necessary to adjust the runner to the surface of the glass and thereby at all times apply the proper weight on the glass in the grinding and polishing operation.

Next patent, Soderberg, No. 1,580,175. This patent covers the type of universal joint which we use in connecting the grinder runner with the spindle in the head which drives it. It is essential that the runner have some flexibility with relation to the spindle which drives it; otherwise, with any slight misalignment of the machine or misalignment of the table serious breakage would result. This type of universal joint permits such flexibility, together with the provision that the amount of flexibility can be controlled. At times these runners are raised when in rotation and without a check as to the amount of flexibility they would be free to flop about in disastrous amount. The universal joint disclosed also provides for the introduction of the sand in and around it to the center of the runner without damage to the universal joint.

The next patent, Fox & Evans, No. 1,610,366. I have described the transfer cars at each end of the building which handle the tables as they come through the grinding and [fol. 763] polishing machines and return them on the return tracks. This patent shows the actual form of construction employed where a locomotive car mounted on the transfer car moves off onto the tracks to get a table or to push a table already gotten onto another track. It permits the operation of the transfer car and the locomotive by the one operator on the locomotive and a means of uncoupling the tables, from the locomotive without the help of other labor and permits the operator at the same time, moving about on the transfer car, to index it accurately with the tracks onto which he wishes to push a table or to remove a table. The mechanism is tied up electrically to be foolproof, and the whole operation is carried on by one man. The importance of this operation can be seen when one considers that this man is responsible for the arrival of the individual tables which are connected onto the regular tables and onto which the glass is laid. The operation must be carried on quickly to supply the two machine ribbons.

Next patent, Heichert and Evans, No. 1,610,374. This patent covers the very simple and efficient means of carrying on two operations that originally required considerable labor. I have described that pegs are used along the side of the table to hold the glass, which is held on the table in addition with plaster. This mechanism automatically drives down the pegs and removes the plaster and puts the surface of the table in better condition for a new coat of plaster than though it were scraped off by hand labor. Before the introduction of this machine six men were employed to carry on this operation in one unit on one shift.

Next patent, Hitchcock, No. 1,629,502. This patent covers the type of grading system employed in our operation. One system as disclosed supplies the grinding machines on both rotary tables. I have described earlier today that the grinding operation starts with coarse sand and successively [fol. 764] finer grades of sand are applied to the grinding operation after the surface is planed. This equipment supplies the full range of graded sand to the grinding machines in the proper sizes and quantities to produce a smooth that will properly polish in the polishing department. It is apparent that a failure of the grading apparatus would cause

a hundred per cent. loss of the product during the time when it was functioning badly. Contrasting this thought with the same thought as applied to individual machines used in the old operation, it is apparent that the grading system is a very vital part of the grinding and polishing unit. This system functions perfectly and can be controlled by one operator. If we did not have this system of grading sand, I do not know where we would turn for one that would give comparable results As evidence of the importance of this development, the company paid Mr. Hitchcock approximately $200,000 for his development in this line, to say nothing of the royalties paid him on the grading apparatus which covered steps leading up to this development.

Next patent, Harrington, No. 1,631,126. This patent shows the type of coupler we employ in the holding of our tables together. It provides for a hook or latch which pulls them tightly together and at the same time specifies fingers and lugs on the ends of the table which are interlocking and prevent any end motion of the tables, relative to each other, up or down. In the development of our tables for the grinding and polishing unit, the question of a satisfactory coupling device caused the engineering department as much trouble as any feature in the whole plant.

The next patent, Evans, No. 1,657,206. This patent discloses a further improvement on the transfer car system already described. Due to the number of operations the man operating the transfer car has to carry out the time allowed for each operation is very limited. The operation [fol. 765] is now carried on where two tables are solidly bolted together so that two are handled in the same time as one. With the wear and tear on the rails of the transfer car onto which these tables travel, a variation in level may occur between the rails on the transfer car and the rails in the building. This also might occur from other causes, but the patent has to do with the necessity of keeping these rails on the same level with the rails from which the cars are taken or pushed onto; otherwise, in transferring a double table from the tracks to the transfer car terrific strain might be put on the joint where they are bolted together and injury occur.

By Mr. O'Shea:

Q. That is, it keeps the cars level?

A. Yes, sir, keeps the transfer car. This patent also dis-

closes all the other features of a one-man operation, including the indexing of the car with the tracks as disclosed previously.

Next patent, Fox, No. 1,660,330. This patent is the fundamental patent of which the Harrington patent on the coupler device already described is an enlargement and actual showing of what we employ. In other words, this is the basic patent on our coupling device.

Next patent, Harrington, No. 1,671,718. This is one of our very important patents in the successful operation of the grinding and polishing unit and applies to the electrical control of the operation. All of the apparatus in the grinding and polishing unit is driven by electrical motors. Each individual grinding and polishing runner has its own motor. In this unit there are 154 grinding and polishing heads. This electrical system, which is very complicated, safeguards the equipment against mistakes that the operators might make in the starting and stopping of the equipment. It does for the operator what he would have to do in the [fol. 766] starting or stopping of the plant but does it in very much less time. It safeguards the equipment from throwing a load on too rapidly. It safeguards the product being ground and polished from all the things that can happen in the event that the operator could not get around to stop the operation or start it at the right time. I believe only a very high-grade electrician could actually understand this patent, but to point out some of the things that can happen in the operation of a unit of this sort, let us suppose that the motors which drive the tables forward continuously should suddenly stop. If the grinding runners continued to run, they would grind holes in the glass. Under this system, if the ribbon of tables stops moving, every runner in the shop comes up automatically. If in the operation one motor driving a grinder runner should stop operating, the runner would at once stop rotating and would drag on the glass, ruining all of the glass which passed under it before it was raised. Under this system a runner stopping in rotation for any reason at once raises off the glass. This patent also covers a complicated automatic system whereby if the power goes off, the runners all raise and when it comes on again, they will go on in sections so that the load is not thrown on too rapidly. It also provides in the event that the voltage drops, which

means that the whole circuit would kick out if the full load remained on, that those runners least essential to the operation come up first, so that the glass further along the ribbon will not lose either polishing or grinding effect. The electrical system defined also permits the metering of the power to each individual runner, disclosing to the operator at all times the amount of power consumed by each runner. It is essential in the grinding and also in the polishing department that the amount of power supplied to each runner has a definite relation to the power supplied to the next runner or to other runners further on in the process; so [fol. 767] that the operator has this means as a guide to adjust the weight of the runner or the condition of the supply of rouge in the case of a grinder runner or a polisher runner. I think that covers the main points in that patent.

Next patent, Fox, No. 1,683,342. In the early stages of the operation of the grinding and polishing units at Creighton it was found that even with the best designed drives that we could get up to propel the tables through the grinding and polishing machines, that they would move forward in a jerky or surging fashion. This meant that the grinding effect was not uniform. In fact, the effect of the surging could be seen on the polished glass. It also threw a strain on the couplers joining the tables together, which at times became so severe that they would loosen and the tables part. This patent covers a scheme for applying a backward pressure on the tables at the opposite end of the string on which they are driven. It is known as a "holdback". It successfully removes the surging of the string of tables and at the same time keeps the ends of the tables under great compression.

Next patent, Hitchcock, No. 1,771,408. This patent covers the principle employed in supplying the rouge to our polishing department. In a sense it is like our grading system where graded sand is applied to the individual grinding machines. Here we supply rouge to the individual polishing machines. It is not an easy matter to supply a small and definite quantity of rouge to one of these polishing machines. You either get more or you get less than you want. The equipment which this patent covers takes what is required and lets the rest go by. A definite quantity of rouge has to be supplied to the various runners in the process of going from no polish to a complete polish, so that it is essential that a satisfactory means is had for the

supply of a definite quantity of rouge to the individual [fol. 768] runners. This equipment satisfactorily carries out this function, and I would say that this patent is as important to the successful polishing of a continuously moving ribbon as we feel the grading patent is to the successful smoothing of the continuously moving glass.

Now, while all of these patents individually are important in themselves, I think it is apparent that when collectively they are woven into the fabric of a grinding and polishing unit such as I have described at Creighton, which makes for a smooth and continuous operating machine, that their importance pyramids.

By Mr. Christy:

Q. Do I correctly understand that the subject matter of all of these patents as you have recited it above was in actual use at Creighton as early as the first of 1928 and continued in use down through the accounting period?

A. Yes, sir.

(It is stipulated that printed copies of the patents already offered in evidence shall have the same effect as the original ones would have, and that the dates respectively given on the face of each as the date of the application for the patent shall be treated as prima facie correct.)

(Hearing adjourned until Thursday, October 6, 1932, at 10 o'clock A. M.)

[fol. 769] Thursday, October 6, 1932.

Met pursuant to adjournment.

Present: Master and counsel as before.

Robert L. Clase, resumes the stand.

Direct examination (continued).

By Mr. Christy:

Q. Referring to this operation at Kokomo and Crystal City as to which you have testified, and which I think we have called the old operation, was it during the accounting period covered by any patents of a fundamental nature?

A. No, sir.

Q. In all essential features it had been practiced for a great many years, had it not?

A. It was the old standard practice as brought over to this country from abroad and there were any number of plants operating in this country by the same process. Any patents which the company held on details of construction were of minor importance. The substance of the operation was open to anybody.

Q. Was this glass which you furnished to Duplate for its laminated product in any sense a special product?

A. No, sir.

Q. You made no special runs for it or anything of that kind?

A. No, sir.

Cross-examination.

By Mr. O'Shea:

Q. Mr. Clause, do you know whether the Ford Motor Company had a glass plant in the year 1928 and thereafter? [fol. 770] A. They did.

Q. Do you know whether they had a continuous process in operation there, not necessarily a continuous process that infringed your patents, but what is generally known in the trade as a continuous process, and when I say do you know whether they had such a process I mean do you know whether they had that in the years 1928, 1928 and the first half year of 1930.

A. Yes, sir, they did.

Q. Were there any other manufacturers of glass of the type that we are discussing here that you know of that had a continuous process, again not necessarily one identical with yours or infringing your patents, in that period?

A. Libby-Owens Company had one similar.

Q. Well, I take it that all these so-called continuous processes effected some saving over the so-called old process?

A. I believe they did.

Q. Do you know in what year the Ford Company first had their continuous process in operation?

A. I can't answer as to the exact year, but they started about the time we did.

Q. About the time you did?

A. Yes, sir—at Creighton.

Q. Is that generally true of this other company you spoke of?

A. That is not true of that company. They started considerably later.

Q. And can you define a little more definitely what you mean by "considerably"—in year periods?

A. I am guessing to some extent, but I don't believe the Libby-Owens-Ford Company had a continuous G. & P. before the year 1928. Now, I have no facts upon which to base that.

Q. That is your best information and belief?

[fol. 771] A. Yes. My reason for believing that is that they had an individual plate grinding and polishing operation which was a step between the old operation described at Crystal City and what they now have today.

Q. Well, you spoke of Libby-Owens-Ford Company having had one some time and your best belief is it didn't get into operation until about or after 1928. This Libby-Owens-Ford Company was an amalgamation of an old company known as Edward Ford Company, was it not, and the Libby-Owens Company?

A. That is correct; yes, sir.

Q. Do you know whether or not this Edward Ford Company had some continuous process operating in its plant before the amalgamation?

A. I think they had a grinding and polishing unit known as the Bicheroux system.

Q. That Bicheroux process is one that was developed abroad, was it not?

A. Yes, sir.

Q. Do you know when the National Plate Glass Company put in their continuous process—in a general way now?

A. I think they installed a Bicheroux grinding and polishing unit, I would guess, in the year 1929 or 1930. Mr. O'Shea, you have misnamed that. It is not a Bicheroux; it is a Heuze.

Q. However, Mr. Clause, there is a so-called continuous process known in the trade as the Bicheroux process?

A. The Bicheroux process is one of casting pots from furnaces through a pair of rolls and hasn't anything to do with grinding and polishing.

Q. It just has to do with the casting operation?

A. That is right.

Q. But isn't that known as a continuous process in the sense that we have been using it here—at least up to the point where it stops through the casting operation?

[fol. 772] A. No, sir, we don't term it as such.

Q. Well, you have stated, have you not, that the Ford Company did have and perhaps still has a so-called continuous process in operation?

A. Yes, sir.

Q. Can you give me, Mr. Clause, from your experience in the glass business, the weight of one square foot of fourth-inch plate glass?

A. You are speaking now of finished glass one-fourth of an inch?

Q. Yes.

A. I think it is about three and three-quarters pounds.

Q. Is it a fact, Mr. Clause, that the bulk of the product at Creighton was sold to automobile manufacturers and automobile body manufacturers?

A. I think it would be a correct statement to say the bulk was sold to automobile manufacturers. As a matter of fact, at times we operate that plant on nothing but glass for mirror manufacturers. In other words, the demand from the automobile trade is very spasmodic and if we supplied only the automobile trade from that plant, there would be many times when the plant would be completely shut down. During those intervals and at all times we supply mirror accounts and trade of that sort from the Creighton plant. We have some customers that demand their mirror requirements be shipped from that plant.

Q. During this period of '28 and '29 and the first five months of 1930, you supplied no large store front glass from the Creighton plant, did you?

A. I think we did supply some.

Q. On this continuous process?

A. Yes, sir.

Q. Well, I gathered from your direct testimony that in this period your width that you manufactured at Creighton [fol. 773] didn't exceed 74 inches. Am I correct in my recollection of that?

A. Yes. I perhaps should modify my statement. We supplied store front glass up to the limit of the size we manufactured.

Q. Up to the 74 inches?

A. Yes, sir.

Q. Any sizes above that during this period were supplied from Kokomo and Crystal City?

A. By necessity, yes.

Q. What was that necessity?

A. We can't manufacture glass at Creighton wider than 72 to 74 inches in width.

Q. Is is the fact that the bulk of this automobile glass was required to be of a thickness of three-sixteenths inch, with the possible tolerances that are allowed from that thickness by the manufacturer?

A. The automobile trade does use quite largely three-sixteenths-inch glass, but in many accounts we have a tolerance from five to nine-thirty-seconds of an inch. Some accounts take them from five to seven, some seven to nine, and other accounts take in the full range of five to nine.

Q. How thick was the mirror glass manufactured at Creighton?

A. I think mostly three-sixteenths.

Q. Was glass of greater thickness than three-sixteenths plus these tolerances made at Kokomo and Crystal City?

A. Yes, sir.

Q. There is one question which is simply for the purpose of clarity. My recollection of your direct testimony at one point is that you spoke of an oven in the old process and a leer as being in the new process. Will you please tell us just what the difference between an oven and a leer is?

[fol. 774] A. In the old process when the glass was pushed over off the casting table it was so plastic that it had to be shoved into an oven where it would rest and stiffen up before it could go on to a leer and be brought down through the annealing range to room temperature. As a matter of fact, there were five of these ovens in the type of leer we used and I think in most of the leers used generally in that process.

Q. That is the old process?

A. Yes, sir.

Q. Now, go ahead and give your description of a leer.

A. Well, a definition of a leer is, I would say, a piece of equipment which takes in at one end a product at a high temperature and brings it down to room temperature in passing through its length in such a fashion that it is not destroyed by breakage, or it is annealed in such a fashion that it is satisfactory for use at the cold end.

Q. You spoke in your direct testimony, in connection with one Hitchcock patent, I think it was the 1,629,502, of having paid the patentee there very large down payment and in addition thereto large royalties.

A. Yes, sir.

Q. Were there any royalties paid to any of these others, or down payments to purchase these, or anything of that sort?

A. No, sir.

Redirect examination.

By Mr. Christy:

Q. In this Bicheroux or Heuze process of which you have spoken, is it not a fact that the glass was rolled in individual sheets and not continuously?

A. Yes, sir.

Q. That is true? It was an individual sheet operation, not continuously?

[fol. 775] A. That is true. One pot was cast after another and the contents formed into individual sheets.

Q. During the accounting period and at all times, the product of the Creighton plant has been used for what you call glazing, has it not?

A. Yes, sir.

Q. I don't know whether it is clear or not, but this National Plate Glass Company's method which was mentioned was of a Bicheroux or Heuze type, making individual sheets, was it not?

A. Yes, sir.

Q. All these patentees from whom you obtained these patents without any remuneration, as you have testified, were employees of your company?

A. Yes, sir.

By Mr. O'Shea:

Q. In the Ford continuous process operation they cast from a tank, did they not?

A. That is correct.

Q. With the molten mass flowing out of a tank onto the table?

A. Yes, sir.

Q. As distinguished from pots?
A. Yes, sir.

Mr. Smith: If the Master please, we do not feel we can proceed further with our case until we have your ruling on the right to examine the plaintiff's books.

(At this point arguments were presented by counsel for the plaintiff and for the defendant on the application of defendant to examine the books of plaintiff.)

ORDER DENYING MOTION TO EXAMINE BOOKS AND RECORDS OF PLAINTIFF

The Master: Defendant's application to examine the books and records by accountants employed by defendants [fol. 776] as read into the record on Tuesday morning by Mr. Smith, covering all details in connection with the matters mentioned in said application, is refused and the defendant is ordered to proceed at once with its case.

Mr. Smith: Defendants except to the refusal of defendants' application to examine the books and records of the plaintiff and decline to proceed further with this case until this matter has been passed upon by the Court.

(Adjournment taken until further notice.)

And now, October 7, 1932, it appearing to the Special Master that the Special Master's denial of the application of counsel for the defense has been referred to the Court, and that the Court has reserved its decision thereon, the hearings before the Special Master are continued until such time as meets the convenience of the parties, after the decision of the Court has been rendered on the question before it.

Pittsburgh, Pennsylvania,
Wednesday, November 2, 1932.

Met pursuant to agreement.

Present: G. Dixon Shrum, Esq., the Master; Ambrose L. O'Shea, Esq., of counsel for the plaintiff; Marshall A.

Christy, Esq., William Watson Smith, Esq., L. E. Hickman, Esq., counsel for the defendants.

C. L. McHenry, a witness produced on behalf of the defendants, having been duly sworn, testified as follows:

[fol. 777] Direct examination.

By Mr. Christy:

Q. Mr. McHenry, all the accounts that have been put into this case so far have stopped with the end of the accounting period, May 30, 1930. After May 30, 1930, was any duplate, made and sold before May 30, 1930, and sealed with gelatine, returned to the Duplate Corporation?

Mr. O'Shea: Objected to on the ground that it is incompetent, irrelevant and immaterial.

The Master: Objection overruled, and an exception noted.

A. Yes, there was.

Q. Have you collected and can you produce a list of the returns after May 30, 1930, of duplate—using gelatine as an adhesive—which was manufactured and sold before that date?

Mr. O'Shea: May I just put in an objection to all testimony relating to anything that happened after May 30, 1930?

Q. Of course, my question means duplate returned on account of defects.

A. I have.

Q. Will you produce it.

Mr. Christy: Statement is offered in evidence as Defendants' Exhibit "W," being summary of returns of duplate, made with gelatine adhesive, and made and sold prior to May 31, 1930, and subsequently returned for defects.

Mr. O'Shea: The same objection.

Q. This statement covers a period commencing June 1, 1930, and continuing through May of 1931, does it?

A. Yes, it does.

[fol. 778] Q. And this statement shows, in the aggregate, 49,810 square feet of duplate, having a billing price of $83,561.42, returned for defects; does it not?

A. Yes, sir.

Q. Why is it that you had such a large accumulation of returns in the few months immediately after May of 1930?

A. As previously explained, the returns were held usually by the motor manufacturers until a sufficient number could be accumulated to be shipped back economically. I would say, hardly any of the returns are sent back in individual sheets; they are held until they get a shipment. This would account for any variation from a regular return each month.

Q. In the individual months, on this Exhibit "W," you have shown under title "Customer's Name," the names of various automobile manufacturers and others. Are these names supposed to indicate the customers who actually made these returns?

A. They are.

Q. Now, is there any other adjustment to be made with respect to duplate, in which gelatine was used as an adhesive, which was made and sold prior to May 30, 1930, and which has not yet been covered?

A. Yes, we have a list of allowances for replacements that were necessary due to the use of gelatine adhesive and is covered in the following schedule.

Mr. Christy: The account list produced by the witness offered in evidence as Defendants' Exhibit "X."

Mr. O'Shea: Same objection.

Q. Now, you said just above that these replacements were due to gelatine adhesive. What did you mean by that?

A. Using gelatine in laminating.

[fol. 779] Q. Did you mean the defects, calling for replacements, were all due to the use of gelatine?

A. No; this was glass that was laminated with gelatine.

Q. You just mean you used gelatine as an adhesive?

Mr. Smith (to the witness): As distinguished from some other adhesive?

A. Yes.

Q. Now, please explain a little more fully the nature of these replacements covered in Exhibit "X"; that is, why they took place, and how they were handled.

A. Glass that had been shipped out and put in cars was sold under a guarantee of from two years to fifteen months.

If, by the end of 1930, the glass would go bad in a car, the customer would come to our dealer or our warehouse and request a replacement under the guarantee. At that time the replacement was made and a charge made back to the Duplate Corporation from the warehouse. This schedule covers all such replacements. The glass was not returned to Duplate; if it had been, it would have been classed under the other schedule of returns.

Q. That is, the warehouse or distributor simply took out the defective windshield, or other light of Duplate, replaced it and threw the defective one away; is that what you mean?

A. Yes, sir.

Q. And at what rates were many of these replacements made, Mr. McHenry?

A. Some of them, the rate for the glass was as high as $4 a foot, because that was what the dealer had paid for it.

Q. That is, the dealer had to pay $4 a square foot for the piece of Duplate which he used to replace the defective one; is that what you mean?

[fol. 780] A. Yes, sir.

Q. And he charged your warehouse, and you credited the warehouse with that amount; is that right?

A. That is right.

Q. Now, you said something about the end of 1930. When did this guarantee go into effect?

A. I cannot give the correct date. Mr. Judson and Mr. Higgins could probably give you that. It was two years for the first period. I think I can give you the date as to the length—as to where the change was made. It was guaranteed for two years from February, 1928, to January 1, 1930, and for fifteen months from January 1st on.

Q. Now, this list of credits for replacements covers a period from May 31, 1930, to July 31, 1931; is that correct?

A. Yes, sir.

Q. And these were all for Duplate which was made and sold prior to May 30, 1930?

A. Yes, sir; and laminated with gelatine.

Q. And none of these replacements—see if I understand you correctly—are included in your Exhibit "W"?

A. They are not.

Q. The plaintiff in this case called and examined Mr. Sharpe, of the accounting firm of Messrs. Lybrand, Ross Brothers and Montgomery, certified public accountants,

and Mr. Sharpe offered certain statements which plaintiff put in evidence as Plaintiff's Exhibits 9 and 9-A, showing alleged profits made by the Duplate Corporation upon profitable sales during the accounting period. Have you read, and do you understand Mr. Sharpe's testimony, and have you examined, and do you understand, these exhibits?

A. I do.

Q. In the computations of Exhibits 9 and 9-A, Mr. Sharpe, as he stated, by the express direction of the plain-
[fol. 781] tiff, excluded from his computation of alleged cost of sales very large items, expenses and losses incurred by the Duplate Corporation in its manufacture of the infringing product. You have been asked to prepare and produce a statement on the same lines as that of the witness Sharpe, namely, setting forth profits which the defendant can be said to have made upon its profitable infringing sales (disregarding all losses on non-profitable sales) and including in cost of sales those items which the defendant considers were properly chargeable to cost of sales. Have you done this?

A. I have.

Q. Will you please produce the statements which you have heard referred to in the last question?

A. (Witness produces statements.)

Q. One of these statements appears to be a computation of monthly cost of sales, and the other one appears to be an extended computation of profits and losses on individual sales during the accounting period; is that correct?

A. That is correct.

Mr. Christy: The first statement, being computation of cost of sales, is offered in evidence as Defendants' Exhibit "Y." The second statement, being the actual computation of alleged profits and losses, is offered in evidence as Defendants' Exhibit "Z."

Mr. O'Shea: Plaintiff desires the privilege of reserving any objection to the offer of these Exhibits "Y" and "Z" until he has had a further opportunity of examining them.

Q. Included in Exhibit "Y" is a letter, directed to counsel and signed by you, explaining the methods of computation which you have pursued in these two Exhibits "Y" and "Z," is there not?

[fol. 782] A. Yes, sir.

Q. Are the statements in that letter correct, to the best of your knowledge and belief?

A. They are.

Q. It appears from the third sheet of this Exhibit "Z," being one of the summaries which, for your own purpose, you have called Exhibit "B," that you find a net profit gained by the defendant, on its profitable infringing sales, of $164,755.72; is that correct?

A. That is correct.

Q. Now, did this require any further adjustment of any sort?

A. It did. This Exhibit "Z" was computed before the experimental expenses had been definitely determined by Mr. Sherts; therefore, it was necessary for me to recalculate, excluding from cost such items as were changed in accordance with our Exhibit "K." I have prepared another sheet which shows, by excluding the items termed "Not Operating Expenses," it would increase this profit of $164,755.72 by $1679.83.

Q. And that was due only to the fact that you stated, that when Mr. Sherts testified and produced Exhibit "K" it included a few items which should have been excluded from cost and which at the time you made your computation you did not exclude; is that right?

A. Yes, sir.

Mr. Christy: Sheet last produced by the witness offered in evidence and marked Exhibit "AA."

Mr. O'Shea: Plaintiff's counsel asks the same privilege with regard to reservation of objections.

Q. Did you prepare Defendants' Exhibit "K," to which you have referred, and as to which Mr. Sherts testified?

A. I did.

[fol. 783] Q. Does it agree with the account of the defendants' books called the "Experimental Account"; that is, does it include all the items in that experimental account?

A. It does.

Mr. Christy: Defendants' counsel offers in evidence the account heretofore identified as Defendants' Exhibit "K," and it is marked Defendants' Exhibit "K."

Q. Are you personally able to state whether or not your list of sales in Exhibit "Z" is in agreement with the list

of sales put in through Mr. Sharpe as Plaintiff's Exhibit No. 9?

A. They are the same.

Q. Now, Mr. McHenry, I have asked you also to give us a statement of what the Plate Glass Company's books show as to the proper proportion of its selling costs which belongs to its sales of infringing Duplate. Have you made such a statement, and will you produce it?

A. I have. (Witness produces statement.)

Mr. Christy: Statement last produced by the witness is offered in evidence as Defendants' Exhibit "BB."

Q. On this Exhibit "BB" you have shown in the first line the items as given by Mr. Sharpe actually paid to the Pittsburgh Plate Glass Company as commissions for sales of infringing Duplate.

A. It is the commission as shown by our books, and I believe it corresponds with the items Mr. Sharpe showed.

Q. Now, in the second line of this Exhibit "BB" you have given items for each year, and in total, called "Expense incurred by P. P. G. Co.". Will you state how these items were computed?

[fol. 784] A. The expense includes the salesmen and other expense of the general office; also the proportion of selling expense of the warehouses. In our manner of accounting we charge against plate glass sales at the warehouses the expense incurred in handling and selling glass. Duplate was included with the charges for plate glass, therefore I took the percentage that Duplate sales were of the total to get the amount applied in this statement against Duplate sales. The fact is, that more stress was put on Duplate than plate glass sales, so that my proportion would be low instead of high.

By Mr. Smith:

Q. You mean by that, there was more selling effort put on Duplate than plate glass?

A. Yes, there was.

By Mr. Christy:

Q. What was this percentage that you took to reach these figures you have given on Exhibit "BB"?

A. The percentage of sales of Duplate and plate glass.

Q. In feet, or in dollars and cents.

A. It is based on money value.

Q. And not on square feet?

A. Not on square feet.

Q. Now, as I understand it, you took this proportion on all of the warehouses' selling expense, is that right, including plate glass and Duplate?

A. It is on the plate glass. The amount charged on plate glass is proportioned between plate glass and Duplate.

Q. But Duplate was originally included in the plate glass; that is what I mean?

A. It was.

Q. Now, what did you do as to the salesmen in the office? [fol. 785] A. The salesmen's salaries and traveling expenses would come out of general office.

Q. And was that proportioned in the same way, or taken absolutely?

A. That was a direct charge.

Q. So that the aggregates of these two charges will make up the figures which you gave in the second line of Exhibit "BB"; is that correct?

A. Yes, sir.

(Cross-examination of Mr. McHenry suspended for the present.)

* * * * * * *

NOTE: There appeared at this point in the Record the testimony of Mr. Tinstman explaining the efforts of Duplate Corporation to salvage material from defective product.

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P. F. DATZ, a witness produced on behalf of defendants, having previously been sworn, testified as follows:

Direct examination.

By Mr. Christy:

Q. You have been here and heard the testimony of Mr. Tintsman have you, Mr. Datz?

A. Yes, sir.

Q. He testified in substance that after the end of the accounting period in this case the company had on hand about 5,604 square feet of returned Duplate which it held for separation and recovery of the plate glass. Have you any data of the experience of the company in recovering plate glass from returned Duplate which will enable you to testify as to the feetage of plate glass recovered from this quantity of Duplate returned?

[fol. 786] A. Yes, sir.

Q. Will you tell me what that data is?

A. The efficiency department retain a record of all of the glass that was separated in the period of March 1931 to May 1931.

Q. Now, just a question there, if you will permit me: Was that the time in which the company separated returned Duplate for the purpose of recovering the plate glass?

A. Yes, sir.

Q. Now proceed.

A. Included in this data was the recovery of this 5,604 square feet of Duplate. The amount of polished plate glass recovered from this 5,604 square feet of Duplate was 5,976 square feet of polished plate glass, with a value of $772.78.

Q. Now how do you reach this figure of five thousand odd square feet of plate glass recovered?

A. The amount of Duplate, 5,604 square feet, represents 11,208 square feet of polished plate glass. From the records in the efficiency department we have a loss in separating this glass of 32½ per cent. This loss in square feet represents 3,643 square feet of polished plate glass. After the glass is cut to pattern, during this operation we have an additional loss of 21 per cent., equalling 1,589 square feet, allowing a net figure of glass used in production, applied on orders, 5,976 square feet of polished plate glass.

Q. You mean, that from the experience of this efficiency department, in this period where separation was carried on, you deduced the result which you have given; is that correct?

A. That is correct.

Q. And how many square feet of Duplate were, in fact, separated during that period?

A. The amount of Duplate glass separated during this period is 11,730 plates.

[fol. 787] Q. Somewhat over 40,000 square feet; is that correct?

A. Somewhat over 40,000 square feet of Duplate.

Q. Yes. And that Duplate, I suppose, came partly from factory rejects and from Duplate manufactured with casein as a binder, as well as from this particular 5,604 feet of your gelatine manufacture; is that correct?

A. Yes, sir.

Q. And 40,000 square feet of Duplate, which you say was separated, did contain about 80,000 square feet of single sheet plate glass; is that right?

A. Yes, sir.

Q. When you were here on the stand last, you and Mr. McHenry were both asked as to the number of square feet of pyralin, recorded as pyralin sheets, shown in your losses of pyralin in what you call the pyralin examination department; is that correct?

A. That is correct.

Q. Can you give us that data now?

A. Yes, sir.

Q. Will you please do so.

A. (Witness produces sheets.)

Q. These sheets which you have just handed me show the figures from which you obtained, from the month of October 1929 to May 1930, inclusive, losses in your pyralin examination department, reduced to square feet; is that correct?

A. Yes, sir.

Mr. Christy: The sheets last produced by the witness are offered in evidence as Defendants' Exhibit "Q-1."

(No cross-examination.)

[fol. 788] H. B. Higgins, a witness produced on behalf of the defendants, having been previously sworn, testified as follows:

Direct examination.

By Mr. Smith:

Q. Mr. Higgins, did the Fisher Body Corporation, prior to the accounting period, have a plate glass plant of its own?

A. Yes.

Q. And in that plant did it make any laminated glass, or was it all plate glass?

A. It was all plate.

Q. Was this plant which you have mentioned, formerly owned by the National Plate Glass Company?

A. Well, the National Plate Glass Company was a subsidiary of the Fisher Body Company, and the Fisher Body Company obtained its plate glass from the National Plate.

Q. I think you testified before in this hearing, as I recollect, that along in 1928 the Duplate Company made a price of $1.75 per square foot for Duplate to the Fisher Body Corporation. Is that what you did say before?

A. That is correct.

Q. Why did the Duplate Corporation make that price to the Fisher Body Corporation?

A. We had an idea, and a policy, that the way to introduce laminated glass was to persuade some prominent automobile manufacturer to adopt it as standard equipment. The adoption of the Ford windshield did not serve the purpose, because the product was not satisfactory, and we thought that if some other manufacturer, notwithstanding Ford's experience, adopted it as standard equipment and gave it its sanction, it would do more to promote the manufacture and sale, and general acceptance of it, than any amount of advertising we could do. So, consequently, [fol. 789] we endeavored to persuade the Fisher Company to put it in, and we named the price of $1.75, frankly, because that was the best price we could get.

Q. Will you state whether or not you encountered any sales resistance in endeavoring to interest the automobile manufacturers in laminated glass?

A. Why, a good deal of sales resistance. None of them were willing to pay the price that was being asked for it. At that particular time—that was in the spring or early summer of 1928—I think all the automobile manufacturers were coming around to the viewpoint that ultimately safety glass was going to be an acceptable product for an automobile, that it was a distinct contribution to the safety of automobiling—all of them personally had it in their own cars—and we believed all of them felt that ultimately it would be adopted as a standard product in automobiles, and yet the price was more than they could afford to pay,

and at that time no demand had been developed to convince them that they would derive from the adoption of it a corresponding sales advantage. It was not difficult to sell the glass if we had had a price for it—the price was the hurdle.

Q. When you say "no demand had been developed" for it, do you mean, no demand among the purchasers of automobiles?

A. Among the automobile public going to the agents. They didn't talk about it. They were not acquainted with the fact that there was such a product as safety glass.

Q. And did you feel that it was necessary to make this low price in order to introduce this product and get automobile manufacturers to buy it?

A. I not only felt it was. I knew it was. And prior to the time I saw Mr. Fisher, the Triplex Company had talked to Mr. Fisher and endeavored to persuade him to put it [fol. 790] in as standard equipment. He had definitely declined it because the price was more than he could afford to pay, and more than he was willing to pay. And, so far as the Fisher Body was concerned, there was no opportunity for the Triplex Company. or any other company, to sell safety glass for models that were being put on the market that summer of 1928—their models for 1928 and '29—so the business was gone at that time. So we stepped in and we quoted a price that was lower than Triplex had quoted, there is no question about that, but it didn't deprive the Triplex of any business because they had been refused already.

Q. In this hearing before the Master on May 8, 1931, Neilson Edwards testified as follows (page 159): "In 1925, I tried to sell the Benedictus patents to the Pittsburgh Plate Glass Company; talked to Mr. Wherrett and Mr. Higgins and Capt. Brown, who is now dead, and they told me that they wouldn't be interested in the patents, because they didn't think that the laminated business was ever going to amount to a big enough industry to interest a company the size of the Pittsburgh Plate Glass Company. We talked to the du Pont Company along the same lines, and got the same reaction. I also talked to the Standard Plate Glass Company." Have you recollection of having a conversation with Mr. Edwards in 1925?

A. I recollect a conversation, Mr. Smith, but I cannot say it was in 1925. It was prior to the time he organized

the Triplex Company, and I rather think he did offer us those patents; yes.

Q. Do you recollect saying, in substance, that you did not think the laminated business was ever going to amount to a big enough industry to interest a company like yours?

A. I do not recollect it, but I would not be at all surprised that that is correct, because at that time our re- [fol. 791] search work on laminated glass had not at all convinced us that we would be able to make a produet that would be suitable; pyralin had not been developed to the point that it was subsequently, the glass discolored and in a short time became unsightly and unsalable, and we did not see at that time that it would be possible to produce a product that would be commercially satisfactory. So it is quite likely I did make that statement.

Q. Mr. Edwards also testified at that same hearing, and I am reading from the transcript on pages 166 and 167, as follows: "Q. Do you recall a conversation with Mr. Wherritt and Mr. Higgins, on or about October 5, 1928?" "A. Mr. Haskell and I visited them at the offices of the Pittsburgh Plate Glass Company here in Pittsburgh, and discussed the general situation in regard to selling laminated glass. They took the position—they told us that they were going to sell laminated glass to one automobile manufacturer in each price class, irrespective of what they got for the product, on the theory that if they got one manufacturer in each price class to adopt laminated glass, the other people would have to follow, and they didn't know what it cost them to make laminated glass and didn't know how to set a price. So they were going to take the business at whatever price they could get, and then hope to make money out of the other people that came to them later. They told us then that they were selling at prices which were very much below the prices we had been quoting. We complained of their having taken business away from us on price. They told us they knew that was so. We also told them that to the best of our knowledge, they were using our process, and that that wasn't fair competition. They denied that they were doing that." Before asking you about the details of that conversation do you remember being present with Mr. Wherrett when this con- [fol. 792] versation took place on or about October 5, 1928, with Mr. Haskell and Mr. Edwards.

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A. I do remember a visit from them, and a talk with them; I don't remember that particular date, but it was after we had taken the contract with the Cadillac.

Q. Did you—either you or Mr. Wherrett—state to them in that conversation, that you were going to sell laminated glass to one automobile manufacturer in each price class, irrespective of what you got for the product?

A. I did not.

Q. Did Mr. Wherrett say anything like that?

A. He did not.

Q. As a matter of fact, did you endeavor to sell to one manufacturer in each price class, regardless of price?

A. We did not.

Q. What was the only manufacturer—if there was only one—to which you did endeavor to sell at a low price?

A. Cadillac Company.

Q. That was this Fisher Body Corporation?

A. Fisher Body Corporation.

Q. That price was $1.75 a square foot, to which you have already testified?

A. Yes, plus the edge work. Now, may I say something, Mr. Smith?

Q. Say what you please.

A. As I have said before, we felt that the best way to introduce safety glass was through its adoption by the automobile manufacturers rather than through advertising, and I was constantly advocating that policy, not only in our own organization but in my talks with Messrs. Edwards and Haskell, and in my talks with the Triplex Corporation and the Libby-Owens Corporation, and our other competitors. It was our general policy, and I felt, and my associates felt, it was advantageous to the industry [fol. 793] as a whole to give this product the sanction of the automobile manufacturers through the use of it in their own product. That was a salient feature in our policy and in order to accomplish that, we did quote, regardless of our cost, to the Cadillac Company, and we made that contract. But, as I have pointed out before, at that time laminated glass was being accepted by the automobile manufacturers; they were beginning to realize its value, and were beginning to feel that ultimately it would be standard in automobile production. Now, had we had such a policy as Mr. Edwards spoke of there, it

would have been a very simple thing to have gone to those other manufacturers and to have made such contracts, because they were in the mood for it, they were willing to push it, but it was the price—that was the barrier. If we had adopted the policy of selling regardless of price, that barrier would have been removed, and it would have been a simple thing to have removed that barrier. The fact that we did not do it was sufficient evidence that Mr. Edwards' testimony is not correct. I am sure I advocated with Mr. Edwards and Mr. Haskell, the desirability of having it introduced with the manufacturers, and to have one manufacturer in each price class take it, but I never told them, nor did Mr. Wherrett tell them, that it was our policy to pursue that course.

Q. As I understand you stated then to Mr. Edwards and Mr. Haskell that that would be a good policy, for Triplex to try to interest some automobile manufacturers, so that they would spread the product by using it, instead of by advertising?

A. I did.

Q. Were you then endeavoring to put Triplex out of the business?

Mr. O'Shea: I object to that as calling for a conclusion. [fol. 794] The Master: We will hear the answer subject to Mr. O'Shea's objection.

A. I was merely stating my views as to the best policy for the industry to adopt to assure the success of the product. There was no selfish motive in it whatever.

Q. As a matter of fact, if the Triplex had succeeded in having some automobile manufacturer adopt this as a standard in automobile production, would that have helped the whole laminated glass business?

A. It would have helped. As an example of how this worked out: After the Cadillac Company had adopted it, and had their car on the market for six months or more with laminated glass in it, the Packard Company felt it was necessary for them to adopt it, and they did decide to put it in. Purely as a result of the Cadillac competition, the Packard Company submitted inquiries to the Triplex Company, Libby-Owens Company, the Indestructo Company, and the Pittsburgh Plate Glass Company. The Libby-Owens Company were the only ones that benefited,

because they took this business at a price lower than anyone else quoted.

Q. As I understand, Libby-Owens Company entered this field in 1929?

A. 1928; the latter part of 1928.

Q. And from that time on, were they vigorous competitors in the business?

A. Very vigorous competitors, and practically every decline in price that occurred from that time on was initiated by the Libby-Owens Company.

Q. And, I suppose, when your competitors cut the price, you had to cut your price also.

A. Yes.

A. At this same hearing Mr. Haskell testified as follows: (I am reading from the transcript, pages 192 and 193. This [fol. 795] was on direct examination by Mr. O'Shea.) (In the transcript, on the same page, 192, above the question that I am about to read to you, reference was made by the witness to a conference between Mr. Haskell—that is the witness—and Mr. Edwards, and Mr. Wherrett and yourself, Mr. Higgins, in or about October, 1928, and with reference to that conversation Mr. Haskell testified as follows): "Q. Give me the conversation between you and Mr. Edwards and Mr. Wherrett and Mr. Higgins." "A. Mr. Edwards and I saw Mr. Higgins and Mr. Wherrett with the idea of finding out what their future policies would be." "Q. Just state the substance of the conversation." "A. The substance of the conversation was, 'You fellows have come into this laminated glass business and you have taken business from our previous customers, apparently at any price. We would like to know just what your future policy is, as to the merchandising of laminated glass;' and they made the statement—Mr. Higgins, I believe, was the actual spokesman—that it was to be their policy to get one car in each price class. That is, something in the lower price class, like Chevrolet, and something in the middle price class, like Buick, Nash and Chrysler, and something in the higher price class, like Pierce Arrow, Cadillac, Lincoln—one of those—to adopt safety glass all around. They had offered to sell at various prices, Mr. Higgins said, and they expected to keep after the situation until they struck a price at which they thought these men would be interested, and they felt that when they once got a car completely equipped

with laminated glass in each of those price classes, that the rest in that price class would have to follow. In which case they could get a decent price from those other manufacturers, once they had been forced into the use of laminated glass through one of their price class adopting it.' Did you or Mr. Wherrett state, in substance, that it was to be [fol. 796] your policy to get one car in each of those price classes mentioned in this answer?

A. We might have told them we would like to get a contract with one manufacturer in each price class, but not irrespective of price, as Mr. Edwards stated.

Q. Did you say you expected to keep after these different class cars until you struck a price at which these men would be interested?

A. We did not.

Q. Did Mr. Wherrett say anything like that in that conversation?

A. He never did.

Q. I think it has been testified at some point in this record—I cannot give the reference just now, but by someone on behalf of the plaintiff—(I believe it was in October, 1929, Mr. Shrum)—that the Duplate Corporation employed an agent named Calhoun, who had formerly been employed by the Triplex Company. Do you know about that, Mr. Higgins?

A. Yes, I do.

Q. Did the Duplate Corporation employ Mr. Calhoun?

A. They did.

A. Mr. Calhoun came to me in the late summer of '29, I think, or the early fall, and said that he had had some differences with Mr. Haskell which had led him to decide to leave the employ of the Triplex Company, and he asked if in our business we didn't have some place where we could use him. I asked him if he was still in the employ of the Triplex Corporation, and he said he was. I told him I could not talk to him, that the Company had a policy of not employing people from our competitors, not taking their employees away from them, and that I could not do anything at all with him without knowing that it would be perfectly satisfactory to Mr. Haskell. I do not recall whether I [fol. 797] telephoned Mr. Haskell, or not, but subsequently I heard from Mr. Calhoun telling me that Mr. Haskell had discharged him, that he was free of any obligations to the

Triplex Corporation, and he would like to talk to me regarding a position. And then I am quite sure I telephoned—I might have written, but I believe I telephoned Mr. Haskell—to find out if that was so, and if, in the event it was so, he would have any objections to our employing Mr. Calhoun—because at that time we were looking for someone or other to develop the business with the bus companies and the taxicab companies, and similar people who were prospects for laminated glass; Mr. Judson was being overworked with the automobile manufacture and we needed to give him help, but I did not want to engage him unless it would be satisfactory to Mr. Haskell. Mr. Haskell told me it would be satisfactory; consequently, we employed him.

Q. Now, did you come in contact with Mr. Calhoun after he entered the employ of the Duplate Corporation?

A. Yes.

Q. Did you at any time ask him any of the business secrets or other secrets of the Triplex Company?

A. Never made any request for any information, and Mr. Calhoun always observed all the proprieties of the case; never mentioned once any of the business of the Triplex Corporation, or any account he had there; never gave any information of any kind, nor did we ask for it.

Q. Now, there has been testimony in behalf of the defendant in this case, to the effect that in the manufacture of the one-eighth-inch plate glass there was a special cutting loss, and I believe the testimony is, that that cutting loss in cents for the year 1928 was .01548; in the year 1929 it was .01621; and in the first five months of 1930 it was .02590. [fol. 798] You understand from that, Mr. Higgins, that this testimony is, that in 1928 this special cutting loss was a little over 1½ cents a foot; in 1929, a little over 1 6/10 cents; and in 1930, over 2½ cents a foot—by that I mean a square foot?

A. Yes, sir.

Q. Are you familiar in a general way with the sizes of plate glass that had to be cut by this automobile trade?

A. I am.

Q. And in your judgment was there, or was there not, this special cutting loss?

A. There was.

Q. Why do you say that, Mr. Higgins?

A. Perhaps the best way for me to explain it is to draw an analogy between the plate glass business and some other kind of business. Let us suppose that the furniture manufacturer is asked to make ten thousand desks just like this one. That would be an ideal order for a furniture manufacturer. He would set his machinery for it, he would turn them all out alike, and he would be able to produce them at an ext-aordinarily low cost. Instead of an order for ten thousand desks like this (indicating), let us suppose he was given an order for ten thousand desks, each one different. It would be an impossible order that no furniture manufacturer would figure on, because each one would be an especially made desk. Now, our business is an exact reverse of that. The most expensive order that we have to execute, is an order calling for large quantities of one size; the most economical order that we have to execute, is an order calling for a large number of plates, each one of a different size.

Q. Now, why is that?

A. May I have a piece of paper?

Q. (Witness handed sheet of paper.)

A. Now, I wonder if you understand that in making plate glass we do not start out to make the size that we sell. If [fol. 799] we have an order for 10,000 windshields, 14 x 44, we never start to make 14 x 44's—the glass is rolled in a sheet, is laid on a table, and our entire effort is to produce at the wareroom, where the glass is cut out, the largest light of glass that we can. Now, that glass comes through the process with numerous defects. At the Creighton factory the standard size is about 70 x 130.

Q. Inches?

A. Inches. Now, I have just made a few marks on this sheet to indicate defects. These defects may be defects of metal—I mean by that, bubbles, blisters, as we call them, or stones from the batch, or stones from the pot, or cuts from the emery, or bloach—that is a bloach where it is completely polished—or any one of a dozen or fifteen causes which make the plate in one respect or another imperfect. And when that plate is received in the wareroom, before cut on order, these defects must be eliminated. I have put those in at random. Here is a light 70 x 130 with those defects in it; now those defects must be cut out; the cutter has his choice of numerous ways of cutting, but, in any

event, he must eliminate them in some way. This is cut, we will say, like this (indicating by drawing on sheet of paper); this is cut across there; this one down here; and then two may be cut out that way, throwing this strip away. So, instead of having a light 70 x 130, we have all these pieces; and out of these pieces we must cut 10,000 lights 14 x 44 (if that is what the order calls for). Now, it is obvious, if we had an assortment of orders, we would have an order for each piece shown in this diagram, in which event there would be no cutting loss whatsoever; we would have, with the exception of this strip, which is thrown away, practically 100 per cent yield from the plate. But when these must all be cut to 14 x 44, using an extreme example, it is quite obvious there is going to be a very large cutting loss there, and there will be some pieces that [fol. 800] are thrown away, that cannot be used—they will be smaller than 14 x 44, smaller than any size we have on order, the residue, and that is thrown into the cullet bin and turned into batch. Therefore, the greater concentration of orders on a narrow range of sizes, the greater the cutting loss, always; and the greatest concentration on sizes that we have comes from the automobile business.

Q. Now, did the automobile orders that your company has received in this accounting period, did they comprise a large number of different sizes or a small number of different sizes?

A. There is a relatively small number of sizes. And I may add this, please? They were largely windshield sizes, because, with the exception of the Cadillac contract, our efforts to sell laminated glass were successful largely with respect to windshield orders, not body glass—the manufacturers didn't go all around—those that we sold.

Q. So, as I understand it, these automobile orders were in a narrow range of sizes, compared with the plate glass orders generally?

A. That's correct.

Q. And that, therefore, there was an unusual cutting loss in getting the sizes out of these large sheets?

A. That is correct.

Q. And is that the basis on which you claim this special cutting loss?

A. It is.

Q. And, in your judgment, is that a sound and fair claim?

A. Perfectly sound; and a fact.

Q. Has your company ever made any quantity of laminated glass for cars in the cheaper grade, like the Ford or Chevrolet?

[fol. 801] A. No. You are referring now to the accounting period?

Q. Yes.

A. No, we have made none at all.

Q. Not during the accounting period?

A. No; not that I recall.

Q. Now, how long have you been connected with the sales organization of the Pittsburgh Plate Glass Company?

A. Here in Pittsburgh, or——

Q. All told.

A. Twenty-seven years.

Q. How long have you been in charge of that department?

A. Fifteen years.

Q. That is, during the period of fifteen years you have outranked every other employee in that department?

A. Yes, sir.

Q. Have you made it a practice to observe the condition of laminated glass as you see at present in automobiles—during this accounting period, and subsequently?

A. I have.

Q. It has been a matter of interest to you, Mr. Higgins?

A. A matter of lively interest to me.

Q. In your capacity as vice-president in charge of the selling department of the Pittsburgh Plate Glass Company?

A. Yes.

Q. During this accounting period, and subsequently, have you ever had your attention particularly directed to the Ford windshields, by what you saw in cars on the public highways and elsewhere?

A. Yes, indeed.

Q. Once, or more than once?

[fol. 802] A. Oh, hundreds and hundreds of times.

Q. And what did you observe as to the character of these windshields that the Ford Company put on their cars beginning in 1928 and continuing until after the accounting period?

A. They were badly discolored, they were full of bubbles, and many of them had bad edge separations, sometimes extending away into the center of the light. That was very

common knowledge, Mr. Smith, in the automobile industry and in the glass industry. And there has nothing happened, nothing has happened to the laminated glass business that has hurt it so much as that Ford windshield; hundreds of thousands of them were replaced with plate glass by our own warehouses, and by our competitors in the glass jobbing business, for automobile owners who simply could not be persuaded to have another one put in—they didn't want to have anything more to do with the product.

Q. Did the Pittsburgh Plate Glass Company replace a large number of these Ford windshields?

A. Tens of thousands of them.

Q. And did Libby-Owens replace any?

A. No, because they are not in the jobbing business, but they did indirectly through their jobbers.

Q. State whether or not these manifest defects in this Ford windshield were not only observed by you, and others in your company, but a matter of common knowledge and common discussion throughout the plate glass industry.

A. Yes; at the jobbers' meeting it was rather facetiously remarked that if it were not for the Ford windshield replacements the jobbers wouldn't have any business.

Q. Can you go out this afternoon where there are parked in Pittsburgh a number of Ford cars, including those equipped with Ford windshields during the accounting pe-
[fol. 803] riod, and point out to the Master a large number of those defective windshields?

A. I am sure I can. May I say something else that occurs to me, Mr. Smith?

Q. Yes, sir.

A. If that Ford windshield, or that non-shatterable windshield in the Ford car, had been an advantage to the Ford Motor Company, that certainly would have been reflected in the product of cars that were competing with Ford, because there is no more highly competitive business in the United States than the low-priced automobile business. Now, no one of the other manufacturers of low-priced cars would have been content to have seen Ford with an advantage of a windshield. If the manufacturer of the Chevrolet car had felt that the non-shatterable glass in the Ford windshield was a salient advantage to the Ford Motor Company, you certainly would have seen a non-shatterable windshield in the Chevrolet car; yet, to this day, never has there been

used a foot in the Chevrolet, never a foot in the Essex, nor a foot in the Overland.

Q. You mean, not a foot of laminated glass?

A. Not to this day. Possibly some of the high-priced models may have it as optional equipment, but I am talking about standard glass furnished by the manufacturers.

By Mr. Christy:

Q. How about the New Plymouth?

A. You mean, for next year?

Q. Yes.

A. The New Plymouth will have it as standard equipment; also as standard equipment in the General Motors cars for next year. That is the result of the work recently done to prevent the discoloration that made the Ford windshield so bad—it is because that has been overcome—that is what has made the laminated glass business so bad.

[fol. 804] A. As I understand your last answer, you state that the Plymouth car for 1933 has laminated glass in the windshield?

A. As standard equipment; yes, sir.

Q. And I think you said that all of the General Motors cars for 1933 will have laminated glass in the windshield?

A. Laminated glass.

Q. Laminated glass in the windshield as standard equipment?

A. Yes, sir.

Q. Now, why is it, if you know, that these cars, such as Plymouth, have come to use laminated glass in the windshield for 1933?

A. Because, largely, the difficulty of discoloration has been overcome, and because the price is down to the place where they are willing to pay for it. They are now getting it for a dollar a foot.

Q. Now, taking a car in a grade higher than the Ford or Chevrolet, take the Buick automobile, has that been one of the largest sellers, if not the largest seller in its price class?

A. It has been the largest seller.

Q. In its price class?

A. Yes.

Q. Up to and including the year 1932, has the Buick car

ever had, as standard equipment, a foot of laminated glass in it?

A. Never has.

Q. But, you say, for 1933 they will have it in the windshield?

A. For 1933 it will be in the windshields of all Buicks, and in the bodies of the high-priced line, as standard equipment.

Q. Such as the LaSalle?

A. No; the high-priced line of the Buick.

[fol. 805] Q. In other words, Buick makes different priced models?

A. Yes. Now, also, Mr. Smith, it might be interesting to know that all Chryslers, all Dodges and all DeSotos next year will have safety glass as standard equipment in the windshield.

Q. Have any of those last three cars that you mentioned had laminated glass as standard equipment in any part of the car up to this time?

A. No.

Q. Are they all large sellers?

A. Very large sellers.

Q. Isn't it a fact that the Chevrolet has consistently outsold the Ford in recent years?

A. I am not sure about that; it has taken a consistently larger percentage of the low-priced business, but I am not sure that it has outsold the Ford.

Q. I see. Now, do you know anything of the experience of the Nash Company, with the use of laminated glass? Did they ever adopt it for a time?

A. Yes, Nash adopted it, I think, in the fall of '28, or in the spring of '29, I have forgotten which, as standard equipment in two of their high-priced lines; they also made models all different, in different price classes, and they undertook to promote the use of it—they listened to our arguments about it; they used it for approximately seven months, I think, and they dropped it because they said, so far as they could determine, there was no sales advantage and that, consequently, there was no reason for continuing to spend the extra money for it.

Q. It is in evidence in this case that the Pittsburgh Plate Glass Company gave Duplate a 10 per cent reduction in the price, as compared with the price to the trade generally. Was that true?

A. It was, after a certain date.

Q. Was that about June, 1929—if you recall?

[fol. 806] A. I think about that time, yes.

Q. What was the reason for that price reduction made by the Pittsburgh Plate Glass Company to the Duplate Corporation?

A. The Duplate Corporation was a sick baby, it had the rickets and we had to do something for it. That was the only reason we gave it 10 per cent concession on glass; and the du Pont Company gave it 10 per cent concession on pyralin.

Q. Was that concession on pyralin also given about June 1, 1929?

A. As I recollect it, the price was not changed until later, but antedated to the same time we applied the 10 per cent concession on plate.

Q. In other words, they credited Duplate back to June, 1929?

A. At the time we started, yes.

Q. Now, there has been evidence in this case that the Duplate Corporation paid the Pittsburgh Plate Glass Company a commission of 5 per cent on the sales of Duplate for a time, and afterwards that was reduced to 3 per cent. Will you please tell the Master, in your opinion, whether or not those commissions were fair and reasonable, and not excessive.

A. They were fair to everyone except the Pittsburgh Plate Glass Company. When we organized the Duplate Corporation, it was understood that the Pittsburgh Plate Glass Company should have the exclusive right to sell the product, because we had contacts with the automobile trade which had been maintained for years; we had men who knew the automobile organizations intimately, and we could see no use in incurring all the expense of building up a new and a green sales department to call on the same people we were selling, and had been selling for years. But the arrangement as to compensation was left for later determination. When we began to sell Duplate I talked with [fol. 807] our associates of the du Pont Company and told them I didn't know what it was going to cost to sell it, it was a new product, and it costs money to introduce a new product, and I would be glad to have the benefit of their suggestions. They declined to make any suggestions; they said

we knew more about it than they did, and whatever we said would be right and fair would be perfectly agreeable to them. So I set the commission, personally, at 5 per cent. It was inadequate, because we were doing an enormous amount of work; not only did we have quite a personnel here at Pittsburgh, but we had a special man at Minneapolis, Chicago, Detroit, St. Louis, Pittsburgh, Philadelphia, Boston and New York, and those men were devoting a lot of time to it. We have sixty-seven warehouses, all of whom stocked the product right away, regardless of whether it had any business for it or not, and that represented quite an expense. We had 500 salesmen operating out of our warehouses, all of whom were trying to sell it to the garages and replacement shops, and everyone that might be interested in it. There was no possible way of determining what it would cost us to sell it, and 5 per cent was certainly a modest compensation for all the effort we were putting in it, but I wanted to "lean backwards," because I did not care to have our associates of the du Pont Company withhold any mental reservations whatsoever with regard to the charges we were making for our service as sales agents. Consequently, it went on that way for a while, and when the showing of the Duplate Corporation was so bad we reduced it to 3 per cent, for no other reason in the world, and we gave them 10 per cent on plate glass. Of course, 3 per cent and 5 per cent are nothing but brokerage commissions. If we have a jobber who sells a carload of glass, he takes the order and sends it in to us and we give him a commission of 3 per cent, he does nothing but take the [fol. 808] order; the actual product, he never sees it, never touches it, yet he gets 3 per cent commission. We were introducing a brand new product which required an enormous amount of work, work by intelligent and expensive men, for the price which we were allowed as a commission. And, aside from all that, we were carrying all the credit risk, assuming all the credit losses there were.

Q. Mr. Higgins, let us assume that the number of square feet of Duplate sold during the accounting period—after taking out of the sales the returns and replacements—were substantially as follows: In the year 1928, 962,448 square feet of Duplate; in the year 1929, 2,019,360 square feet of Duplate; in the first five months of 1930, 617,728 square feet of Duplate. Will you please state whether or not, if

the Duplate Corporation had not been selling any laminated glass whatsoever, the Pittsburgh Plate Glass Company would have been able to sell a number of square feet of one-quarter inch or three-sixteenths inch plate glass equivalent to the number of square feet of Duplate which I have just embodied in this question.

A. I undoubtedly think we would. All the customers that we had for Duplate were regular customers of ours; most of them were exclusive customers who bought from us almost entirely, but we were not a regular source of supply for the Fisher Body Company. I think, unquestionably, we would have sold the same number of feet in plate glass that we sold in Duplate to all the other manufacturers, aside from the Fisher Body Company. Now, we have at times sold quite substantial amounts to the Fisher Body Company, but we cannot honestly claim that we would have sold them as many feet of clear glass, or plate glass, as we sold of Duplate; we might have, but I would not say we would have.

[fol. 809] Q. Leaving out the sales of Duplate to the Fisher Body Corporation, would you have sold to other customers the same number of feet of plate glass as the area in feet that you sold in Duplate, which, without repeating them all, was 962,448 square feet in 1928?

A. Yes; I am sure we would have.

Q. Now, assuming that the sales to the Fisher Body Corporation, including Fleetwood, in 1928, were 558,137 square feet of glass; subtracting that from the total square feet of Duplate sold in that year, leaves 404,311 square feet. Do you mean, in your opinion, you would have sold the last named amount of square feet in the form of one-quarter inch or three-sixteenths inch glass, if you had not sold any laminated glass at all?

A. I am sure we would have, because with those customers we were substituting one product of ours for another; they were already buying glass from us.

Q. Take the year 1929, and assume the sales of Duplate to Fisher and Fleetwood were 640,155 square feet; subtracting that from the area of Duplate sold to all people by the Duplate Corporation in that year, leaves 1,379,205 square feet. Do you mean that in your opinion you would have sold the last-mentioned number of square feet of the one-

quarter inch and three-sixteenths inch glass if you had not been selling laminated glass at all?

A. Yes.

Q. And similarly, in the first five months of 1930, assuming your sales of Duplate to Fisher and Fleetwood were 23,272 square feet; deducting that from the total Duplate sales in the first five months of 1930, leaves 594,456 square feet. Do you mean your company would have sold the last-mentioned number of square feet in the form of one-quarter inch and three-sixteenth- inch glass if you had not been selling laminated glass at all?

[fol. 810] A. Yes.

Q. Mr. Higgins, you spoke about the keen competition offered by the Libby-Owens Company during this accounting period in laminated glass. Have you ascertained the amount of sales of that product of the Libby-Owens Company?

A. Yes, I know approximately what they produced.

Q. Can you give us those sales in 1928, '29, and the first five months of 1930, separately?

A. In 1928 they made approximately 35,000 feet; in 1929, approximately 650,000 feet; and in 1930—I haven't the production for the first five months, but for the year their production was about 50 per cent. larger than ours.

Q. That was laminated glass?

A. Laminated glass—superficial feet.

Q. These figures represent the production of that article by the Libby-Owens Company?

A. The sales, the shipments of glass.

Q. Laminated glass?

A. Laminated glass—superficial feet.

Q. Square feet.

A. Yes.

E. E. TINSTMAN recalled.

Cross-examination.

By Mr. O'Shea:

Q. Mr. Tinstman, you have produced the credit memorandum covering receiving slip 445, and that credit memorandum I hold in my hand; is that correct?

A. That is correct; yes, sir.

Q. Are there any symbols, letters, or other indicia by which you can determine on the face of this credit memorandum, which you have produced, which shows to you the [fol. 811] shipping date of the glass for which a credit was given, as indicated on receiving slip 445?

A. No, sir; not on the credit memorandum.

Q. You have also produced a credit memorandum showing a credit given to the customer, and corresponding, as I understand it, to receiving slips Nos. 556 and 627; and that credit memorandum I hold in my hand. Is that correct?

A. That is correct.

Q. Are there any symbols, letters, figures, or other indicia on that credit memorandum which indicates the specific shipping date of the goods indicated thereon?

A. No, sir; it is based entirely on my letter accompanying that, so that they may know how to credit the glass. In other words, at a price during a certain period, is based solely on my report accompanying that, and you have a copy of that report.

Q. And that letter is with a series of letters which are marked in evidence here as Exhibit "CC"?

A. I believe so.

Redirect examination.

By Mr. Smith:

Q. Mr. Tinstman, while these two credit memoranda, concerning which you have been interrogated, do not have on the face of them any symbols as to date of manufacture, or shipping date, did you, or did you not, have such information as the basis upon which you made up these credit memoranda?

A. Precisely so; on the basis of my letter the credit is allowed, otherwise there would be no credit memorandum.

Q. And the letter, I suppose, is based on prices you had before you wrote the letter?

A. You have on file now one letter giving those dates on the basis of my inspection. The credit is allowed subse- [fol. 812] quently on the basis of the price that obtained during the period of manufacture and shipment.

Recross-examination.

By Mr. O'Shea:

Q. On this credit memorandum that you have produced showing the credit granted to Fisher Body Corporation, and covering the glass indicated on receiving slips 556 and 627, I notice an entry here stating as follows: "To cancel our invoice of May 13th on account of Order 'B', to replace rejects returned to Creighton." Does that phrase in there, "our invoice of May 13th", refer to the invoice to the customer, to wit, Fisher Body Corporation, for the goods which were shipped to them?

A. At that date. That simply corroborates my previous statement that all returns from the Fisher Body Corporation were carried in one ledger account, and the credit was not passed to the Fisher Body Corporation until such time as they sent us an order replacing an equivalent amount of feetage which, at the time of shipment, was invoiced to them, and a credit memo from this pool or reserve was issued at the same time.

Q. Then the phrase "invoice of May 13th" does not refer to your invoice of the glass that is shown on receiving slips 556 and 627?

A. It covers an equivalent amount of feetage which was evidently shipped on May 13——

Q. What year?

A. Of '31—covering a credit which was due Fisher Body but was not allowed until such time as they had specified on an order said equivalent amount of feetage.

Q. There is nothing on this credit memorandum then, that you refer to, indicating the original invoice under [fol. 813] which the glass, shown on receiving slips 556 and 627, were shipped?

A. Yes, there is; receiving slips 556 and 627 were attached to the copy of my report, the letter and the receiving slip being dated on the same day, so that those several papers tie in together to show the exact manufacturing date.

(Adjourned until Thursday, November 3, 1932, at 10 o'clock A. M.)

Thursday, November 3, 1932, 10 A. M.

H. B. Higgins recalled.

Direct examination (continued).

By Mr. Smith:

Q. Mr. Higgins, do you know anything about the efforts that the Saftee Glass Company made to induce automobile manufacturers to purchase laminated glass?

A. I know something about it, Mr. Smith, from the conversation I had with Col. Kolb, who owns that company.

Q. What did he say about that?

A. He told me that his intention in entering the laminated glass business was to provide protection for people who were in automobiles; that he became interested in it—and he had no occasion to form a company for financial reasons, because he is a rather wealthy man—and that it became a hobby with him. He had many friends among the automobile manufacturers to whom he appealed personally to see if he could not persuade them to adopt it as standard equipment in their cars, and he complained very vehemently over what he termed a very parsimonious policy of their [fol. 814] not being willing to spend a cent to protect people who bought cars from them. But the company did make a strenuous effort to introduce laminated glass in automobiles, but they gave up hope on account of the price; they could not persuade the automobile manufacturers to pay the price they felt they had to ask for it. So that the business developed into rather a specialty business, although it started out quite differently.

Q. Specialty—meaning goggles and things of that kind?

A. Goggles and things of that kind.

Q. Do you know whether or not this Saftee Glass Company did a very large business in goggles made of laminated glass during the War?

A. They did, yes.

Cross-examination.

By Mr. O'Shea:

Q. Mr. Higgins, if you recall, yesterday you drew a little diagram on a sheet of paper, illustrating the cutting of

one-eighth inch plate glass, stating that it was the custom of the Pittsburgh Plate Glass Company to start with a sheet of this glass approximately 70 inches x 130 inches, is my recollection of the precise figures given?

A. Yes, that is about right.

Q. And then across the middle of that page you had a strip of that glass with dots or marks on it—fabricating defects—manufacturing defects in that large plate of glass —stating at that time that in cutting up that glass, that strip with the defects on it were what you termed wastage or loss, using those two terms synonymously, as I recollect the testimony. Have I correctly stated the illustration that you made yesterday?

[fol. 815] A. Not quite, Mr. O'Shea; at least, I did not mean to create the impression that any particular strip on that drawing which I made would be thrown away. I was merely illustrating the manner in which glass was cut at the factory, and the difficulty that we had in applying the sizes obtained after the defects are eliminated, two orders in hand that call for concentration of sizes. Those defects which I put in there were put in at random, with no particular significance——

Q. —except to signify that practically all pieces of glass —that is, those large pieces, would have some defect in them which would have to be cut out; and where there was a defect and it could not be used for any available commercial purpose, it was thrown away into the cullet heap?

A. Not the defects, but strips arising through defects.

Q. That strip, in which defects appeared, would have to go to the cullet heap?

A. Yes.

Q. Of course, it is a fact, however, isn't it, that wastage or loss was absorbed in the cost of the glass—that is, taken into consideration in computing your cost of manufacture?

A. Some of it probably is, although I should prefer to have the accountants answer that, Mr. O'Shea. We have two different types of losses in a factory wareroom: One of them is the loss that arises through squaring and throwing away small pieces, and things that go into the cullet bin at the time the glass is cut; another loss arises through the accumulation of odds and ends that may subsequently be thrown away but not thrown away at the time—for in-

stance, we may have an accumulation of four-inch strips, or some other size, an accumulation of small glass which ultimately is of no value to us; and then there is still an- [fol. 816] other loss that arises through the subsequent sale, at a price very much below cost, of the residue that is accumulated during the cutting process.

Q. I think what you have just said has been fairly well brought out in the testimony of Mr. McHenry, but I was asking you if you did not know that all of that so-called shrinkage, or wastage, is absorbed in the manufacturing cost figure, which is given in this case at approximately 16 cents?

A. No, I do not think it is, Mr. O'Shea.

Q. You do not think it is.

A. I do not think it is.

Q. You think that even that defective strip, that you used in your illustrative drawing yesterday, is not absorbed?

A. Yes, I do.

Q. You think that is absorbed?

A. Oh, yes; that is what I referred to as the "squaring loss", which is taken in the factory wareroom. That type of loss, of course, would go into factory cost, and trimming of the edge would go into factory cost, and anything thrown away at the time the glass is cut would go into factory cost, but the other types of losses I have mentioned, would not, according to my understanding, although I would prefer someone more familiar with the details of factory accounting to testify as to that.

Q. Those odd pieces of glass, that you now describe as "other types of losses", were the rather large squares in your illustrative drawing of yesterday, as I understand it, and which had no manufacturing defects in them?

A. May I illustrate this a little more?

Q. Certainly.

A. As I recall this, we cut it up something like this—(witness indicating by drawing on sheet of paper): Let us suppose we cut it up like that. Now, this large square, that [fol. 817] you have just inquired about, would be one of the squares, one of the pieces which we would use for cutting the order in half. Now, suppose this is 40 x 40, and suppose we had to cut 18 x 32s out of it, let's say—now, you

would have a piece here 8 x 40 left over. That is the type of loss I am referring to.

Q. In other words, that is the type of loss that you would set aside with the possibility that you would find a customer wanting a piece of that?

A. Subsequent sale.

Q. And that type of loss you think is not absorbed in the original manufacturing cost?

A. I am very confident it is not; yes.

Q. And that type of loss is the type of loss, is it not, that falls into the category for which Pittsburgh Plate Glass Company is claiming .01548 credit for, in this accounting, in the year 1928?

A. I have not gone over any of these financial exhibits.

Q. You do not know what the claims are in here?

A. I am not familiar with the figures of the exhibits.

Q. Now, that type of loss that you spoke of there, that glass was sometimes sold to customers? In other words, you sometimes, for that kind of glass, did find a customer?

A. Yes.

Q. And it was your duty to put the selling price that that type of glass would bear, or carry?

A. Well, we have a published price for it.

Q. For that type of piece of glass?

A. That's right.

Q. When that type of piece of glass, which results from cutting in the factory wareroom, reaches what is called in the trade a 1 foot to 2 feet 8 inch bracket, that is a standard bracket for a piece of glass, is it not, in the industry?

[fol. 818] A. Yes.

Q. And you have regular selling prices for that?

A. Yes.

Q. It is a fact, is it not, that you did make that selling price, for that type of loss, higher than your manufacturing cost, in your endeavor to make a profit out of it?

A. Well, we always get the best price we can for all our brackets. But this particular size—to continue with this illustration here—8 x 40, is not a size that is in demand for any purpose. If that were eventually sold—taking this particular illustration here—it probably could be sold only by cutting it down to an 8 x 10, because there is no demand for an 8 x 40. You cannot think of any purpose for which a piece of plate glass 8 inches wide and 40 inches long could

be used. If it were cut down to an 8 x 10, it could be used in a cut up sash for a residence, let us say, or a French door, or something of that sort, but this type of size is always a size that is not in demand, and, consequently, a size that must be cut with still further shrinkage and sold generally at a price that is far below the cost—most always, if it is sold at all, at a strip size under one square foot.

Q. But it is always your endeavor to keep the selling price of that above the unit cost price?

A. It is never possible on those sizes, Mr. O'Shea, because they are in competition with window glass selling for 5 cents a foot, or 4 cents, or what not. Our price list, in evidence here, will show the prices at which these smaller sizes, under one square foot, are sold.

Q. Well, the price list, Mr. Higgins, is not in evidence, but it is testified to by Mr. McHenry that the average selling price of that type of glass—that is to say, from strip sizes up to glass within the standard bracket of from 1 foot to 2 feet 8 inches—was sold by your company at an average price of 20 odd cents. You think that is wrong?

[fol. 819] A. I don't know what the testimony is, Mr. O'Shea, but if it is that, it is inaccurate. I sent over, at your request after I testified before, three or four price lists which I thought were in evidence, and those price lists are not quite the same as today's, but they will give you the general picture of the relation between large and small sizes. Here is one, Mr. O'Shea; you see, those prices are 6, 7 and 8 cents a foot, and frequently, in order to move an accumulation of them, they are sold at less than those prices.

Q. In Mr. McHenry's testimony, Mr. Higgins, he was asked this question, and gave this answer, at page 920 of the transcript: "Q. As I understand it, even the average of all the glass included in this item entitled "Loss Cutting"—that is to say, both the glass within the 1' to 2' 8" brackets and the so-called strip sizes sold at an average of .20644?" His answer is: "That is true." Do I understand you to say now, you think that is not correct?

A. I do not see how it can be, Mr. O'Shea, although I do not want to dispute the testimony of the accountant. Our accumulation of small sizes is so large that I do not see how that could possibly average a price of 20 cents a foot, including strips.

Q. If your accounts on the books indicate that that is the fact, why, I assume you are willing to admit that it must be so—is that the substance of your last answer?

A. That would be equivalent to admitting that our accountants never make an error, and I cannot speak that way of them.

Q. You are testifying from recollection, whereas Mr. McHenry was testifying from the books.

A. I think I can get at this now. In the 1 foot to 2 feet 8 inch A and B brackets, there are sizes that carry a good price, and they are sizes that are in demand; for instance, some sizes that are used in the furniture industry that [fol. 820] might bring the average of all of this small glass up; but those sizes would not be the sizes to which I am referring here, because in Mr. McHenry's figure he has probably included all the sizes the Company has sold under the 2 feet 8 inch bracket. I think we gave the same answer.

Q. Look at that, Mr. Higgins (handing witness transcript of testimony), starting with "Yes, sir." "Now can you state——" (referring to page 920). As I understand it, you now feel that the testimony of Mr. McHenry that I have quoted to you is correct, in that it states an average sale price of the strips and the brackets, and all these other sizes of the types that you used in your illustrative drawing?

A. I think probably it is, Mr. O'Shea, although that price would not be the average price of the sizes I have been talking about here.

Q. Well, have you any figures on which you could compute the average price of the sizes which you are talking about here?

A. No, I have not; although in the main when they were sold at all, as I have said, they were sold as sizes under one square foot.

Q. Now, Mr. Higgins, from your familiarity with the automobile trade, and its connection with this laminated glass business, are you able to state whether or not the Lincoln Company adopted laminated glass as standard equipment on its cars?

A. Yes, it did.

Q. Do you know about when they adopted that laminated glass as standard equipment?

A. We did not sell Lincoln, but my recollection is, it was perhaps in '28.

Q. Is your recollection sufficiently keen to remember whether it was in the early or latter part of 1928?

[fol. 821] A. No, but it probably was at the time when they changed models; I don't know whether they changed models in the summer, or the fall, or spring.

Q. Am I correct in my recollection of your testimony that Cadillac adopted laminated glass of your manufacture in the year 1928?

A. Yes.

Q. And about what part of the year?

A. When they were changing models in the summer time —July.

Q. July, 1928?

A. Yes.

Q. Do you know whether or not Lincoln had adopted it prior to that, or about that time, or after that?

A. My recollection is, Mr. O'Shea, that it was about that time.

Q. About the same time?

A. About the same time.

Q. Can you state from your recollection as to when the Libby-Owens Company entered the laminated glass business?

A. The latter part of 1928.

Q. The latter part—you mean, some time after the last quarter?

A. Yes, I think it was in the last quarter of the year.

Q. That would be some time in October, November or December?

A. Yes, that is my recollection.

Q. Well, did Libby-Owens at that time build a new laminated glass plant, in 1928, or did they simply operate in their old plant?

A. I don't know, Mr. O'Shea, but I don't think Libby-Owens made much glass except in their new plant. So, putting the two together, I imagine they were building it during 1928.

[fol. 822] Q. And the phrase "new plant" in that answer means new laminated glass plant?

A. Laminated glass plant. I am speaking now, however, only from hearsay.

Q. Now, Mr. Higgins, my recollection of your testimony is: About the middle of the year 1928, because of the serious illness of this child known as Duplate, the Pittsburgh

Plate Glass Company reduced its commissions from 5 to 3 per cent.

A. If that was the time.

Q. Assuming that was the time. I guess maybe I'm wrong; it should be 1929.

A. '29.

Q. I assume that what you meant by the child being sick with the rickets was, that it was losing money during those days?

A. That is correct.

Q. Did you give any consideration at that time to the cause of that illness of this child?

A. Oh, we were very much concerned about it.

Q. And didn't you come to the conclusion that the cause was because of its losses, and because of its failure to make any profits?

A. Certainly.

Q. Did you give any consideration to the fact that the one possible way, or remedy for the cure of that illness, would have been to raise the selling price of this glass?

A. That was not the one possible cure, Mr. O'Shea. Our losses were operating losses, were due to difficulties we had at the plant, to unexpected advance in the production, and costs that were far higher than we had ever anticipated.

Q. But at that time you knew that because of that defective product, that the operating costs were considerably higher than your selling price?

A. Yes, on some orders.

[fol. 823] Q. Well, were there any orders at that time, 1929, that you were making money on, on the selling price that you were obtaining?

A. It was mighty hard to find, but I guess you might have found one or two of them.

Q. Isn't it a fact that the Saftee Glass Company, of Philadelphia, did sell considerable glass during the war for airplanes, ships, and so forth?

A. I believe they did, Mr. O'Shea.

Q. And those were rather larger sizes—at least, than goggles—were they not? They would necessarily be?

A. Yes.

Q. The glass that was used on airplanes was more or

less of a windshield, the same as the automobile windshield and cabin windows?

A. Yes.

Redirect examination.

By Mr. Smith:

Q. Mr. Higgins, Mr. O'Shea, in one or more of his questions, suggested as a cure for this sick child, the Duplate Corporation, that you might have raised the price of laminated glass. Why didn't you raise the price?

A. It would have shut off what business we had.

Q. You couldn't have sold the product?

A. Couldn't have sold the product.

Q. You have been also interrogated by Mr. O'Shea concerning the evidence of Mr. McHenry on page 920 of the record, and I want to read you that testimony. This is examination of Mr. McHenry: "Q. Now, can you state from your working papers whether or not all of the glass in the 1′ to 2′ 8″ bracket was sold for more than .15590 in the year 1928?" "A. The average selling price, the 1 to 2′ 8″, of this that I have taken as cutting loss was .2387." You will notice that the sizes Mr. McHenry is dealing with [fol. 824] are size not below 1 foot, sizes 1 foot to 2 feet 8 inches.

A. Yes.

Q. Is that the kind of glass sizes, in which you would have to sell the glass, for which you claim this special cutting loss?

A. These sizes which I have referred to are sizes that are not of the proper shape to fill the current demand. You may have, in the 1 foot to 2 feet 8 inches bracket, a size that will be ordered by the thousands, and you may have in that same bracket another size that cannot be sold at all because it is not the proper shape. When we accumulate sizes that are dead, that cannot be sold, the only thing we can do with them is to throw them away, which means making batch out of it, or cullet, and getting them down to some size that can be sold. So they are cut down and sold whenever a price can be obtained that is greater than the value of the cullet.

Q. I understand the testimony of Mr. McHenry to refer to that glass which actually was sold.

A. The glass that actually was sold.

Q. The necessity of having to cut to these automobile limited number of sizes, does that result in an unusual amount of glass that has to be thrown away in fragments, in cullet?

A. Has to be thrown away in fragments, and the accumulation of a great many dead sizes which have to be cut down and sold as strips.

Q. Now, so that we may have it right in this connection, without making the Master go through all these bulky records, what does your price list, which has been offered in evidence in this case, show the prices per square foot on the smaller sizes?

A. The 3-inch strip, 6 cents.

Q. That is 6 cents per square foot?

[fol. 825] A. Six cents per square foot. 4-inch strip, 7 cents; 5-inch strip, 8 cents. Do you wish me to continue?

Q. That is enough. It appears, as the size gets larger, the price increases?

A. Yes; the smaller the size, the lower the price. May I also say, Mr. Smith, that sometimes sales of these dead sizes are made at prices lower than that schedule. I recall, for instance, sales that were made to the manufacturers of casement windows, for residences, which run, largely, 7 x 10 and 8 x 11 inches; we have sold carloads of those sizes to manufacturers of casement windows at prices substantially below even those low prices that are given in the schedule.

Q. That is, at prices below these prices of 6, 7, 8 and 9 cents a square foot?

A. I could get the price on that, if it is important, but the prices I have just quoted from the list are the stock sheet prices; the prices for cut sizes are somewhat higher, but these special sales to which I have referred were probably made at about stock sheet price.

JAMES C. BRADLEY, a witness produced on behalf of defendants, having been duly sworn, testified as follows:

Direct examination.

By Mr. Smith:

Q. Mr. Bradley, where do you live?
A. Pittsburgh.
Q. And how long have you lived in Pittsburgh?
A. Since 1907.
Q. Are you a member of the bar?
A. I am a member of the bar of the Federal courts; I have never been admitted to the local courts.
Q. Are you a patent lawyer?
A. A patent lawyer; yes, sir.
[fol. 826] Q. How long have you been specializing in that field of law?
A. Since 1907.
Q. That is your entire work, is it, Mr. Bradley?
A. Not exactly. I got my original training in this line in the Patent Office in Washington, where I was Assistant Examiner for about four years in the U. S. Patent Office, prior to coming to Pittsburgh.
Q. I mean, you devote your entire time to the patent law?
A. Yes, I do.
Q. And are you employed by the Pittsburgh Plate Glass Company?
A. I am employed by the Pittsburgh Plate Glass Company, and have been so employed since 1918.
Q. And you have your office in the company's office?
A. Right with the office of the company.
Q. And you have been employed as patent counsel during that period of time?
A. I have.
Q. You are head of the patent department?
A. Yes.

Mr. Smith: I think it has been shown in this case, Mr. Shrum, that the Pittsburgh Safety Glass Company, of Corporation, was organized about December, 1927, if I recall correctly.

Q. Is it your recollection that that was about when that corporation was organized?

A. That is my recollection.

Q. That company was the company whose name was afterwards changed to Duplate Corporation, wasn't it?

A. That is so.

Q. At the time of the organization of the Pittsburgh Safety Glass Company, or shortly prior thereto—which [fol. 827] would be some time in 1927—will you state whether or not you rendered any opinion to the Pittsburgh Plate Glass Company, or the Pittsburgh Safety Glass Company with respect to the Benedictus patent that is involved in this litigation?

A. Yes, I did. I rendered opinions on several occasions, orally. I was in very close touch with the officials of the Safety Glass Company, so that I did not make any written reports, as I remember, and I have looked in my records to see whether I made any such reports at that time, and have not been able to find that I did.

Q. Did you investigate the entire patent situation, to the best of your ability, as affecting this laminated glass?

A. Yes, I did, in December, 1927.

Q. Did you investigate any patents in addition to the Benedictus patent?

A. Yes; I made a survey of the patents relating to safety glass, with the idea of finding out just what we could do, and I ran across a number of other Benedictus patents, and others besides, and I remember this patent very distinctly—I got the file of this patent to see what happened to it in the Patent Office.

Q. Do you remember whether the research department of the Pittsburgh Plate Glass Company did any research work in connection with the proposed manufacture of safety glass in 1927?

A. Yes, they had been doing work in this line for a long time—possibly before, even; the matter became especially active towards the last of the year, toward November and December, at which time I thought it was a good time to make a survey of the patent literature to see where we stood.

Q. Do you remember what adhesive the research department had concluded was the most promising?

[fol. 828] A. The most promising adhesive appeared to be the gelatine.

Q. And what, if any, investigation did you make with respect to the patents covering the use of gelatine as an adhesive?

A. I made a search to see whether there was any patent which broadly covered the use of gelatine. The only patent that seemed to be pertinent, was the Benedictus patent here in suit. I made a study of this patent with a view of seeing whether or not the method in which we proposed to use gelatine would involve an infringement. At that time the procedure of the research department was to apply a coating of gelatine to the glass, either by brushing or spraying, allow it to dry until it became a dull color, and then composit the glass in a press under a heating pressure, or in rubber bags. At that time the Pittsburgh Plate Glass Company's research men favored the press, but they did some work both ways, and had in mind compositing by rubber bags. The Benedictus patent, as I understood it, was directly toward the use of gelatine in rather a new way. Benedictus pointed out in the patent that gelatine used in the ordinary way, merely air dried, contained enough moisture to mar the glass, and he proposed to avoid this difficulty, which he did by drying the gelatine and then treating it with a dehydrating agent—that is, a chemical which would remove some more of the moisture—after which the glass was composited in the usual way. The first eleven claims of this patent were directed to the process, and in each claim specified the use of a dehydrating agent. The last claim, which was the claim in suit in this litigation——

Q. That is the twelfth?

A. The twelfth claim, involved the use of gelatine substantially free from moisture. Now, it seemed clear to me, therefore, that this patent covered the use of gelatine in an [fol. 829] original way, by the step of dehydration, and I reasoned that, if we used gelatine by merely air drying, we were not infringing the patent. And I reported this conclusion to Captain Brown, and to Mr. R. L. Clause, who was vice-president of the Pittsburgh Plate Glass Company, and who later became vice-president and general manager of the Pittsburgh Safety Glass Company. I told him I did not believe we would have any trouble with this patent. That

was so clear that it was allowed by the Patent Office, on the understanding that it covered this additional step of dehydration; which we did not propose to use. I was influenced in this view, that we would not have any trouble, by the knowledge that the Saftee Glass Company of Philadelphia had been using the identical process, which we proposed to use, for a great many years—as much as ten years anyway—without molestation from the owners of the Benedictus patent. From this, it appeared to me that either it was recognized that a process involving gelatine without dehydration did not infringe the Benedictus patent, or else that the owners of the Benedictus patent regarded it very lightly.

Q. And did you report to Captain Brown and Mr. Clause that in your opinion this process, proposed to be used by the Pittsburgh Safety Glass Company (if that is its right name) would not, in your opinion be a violation of the Benedictus patent?

A. I did; and I further said I did not think we would ever be troubled by the patent. I did not think a suit would ever be brought on that patent.

Mr. Smith: In this connection, Mr. Shrum, defendants offer in evidence, for the information of the Master, the report of the decision in Triplex Safety Glass Company of North America v. Kolb, doing business under the name of Saftee Glass Company, reported in 53 Fed. 2d, at page [fol. 830] 1062; the opinion being written by Judge Kirkpatrick in November, 1931, in which case the bill brought by the plaintiff, the Triplex Safety Glass Company of North America, was dismissed by reason of laches.

I do not formally offer it in evidence; I call the attention of the Master to it, and I do this in connection with the testimony of this witness, and also in connection with the testimony of the plaintiff's witness, Mr. Edwards, given on page 166 of the record, which is as follows: "Q. Do you know whether the Triplex Company has a suit pending against the Saftee Glass Company, of Philadelphia? A. Yes, sir, I do. We have a preliminary hearing on Wednesday of this week."

Q. Now, Mr. Bradley, about the time the Pittsburgh Safety Glass Company was organized, or shortly thereafter, were you asked by an official of the Pittsburgh Safety Glass

Company to arrange a meeting with the attorneys of the du Pont Company to discuss the patent situation?

Mr. O'Shea: When was that?

Mr. Smith: Some time early in 1928.

A. Yes, I was asked to arrange such a conference, and, acting in accordance with those instructions, I went to Wilmington——

Q. May I interrupt you, Mr. Bradley?

A. Yes.

Q. At whose instance did you arrange the meeting? Do you know the man's name?

A. At the instance of Capt. Brown, I believe. I went to Wilmington with H. K. Hitchcock, consulting engineer of the Pittsburgh Plate Glass Company, and a member of the Patent Committee, and had a conference with Mr. H. A. Kingsbury, who was patent attorney in the employ of the [fol. 831] du Pont Viscoloid Company. I took my patent data with me that I had collected in my previous survey, and found that Mr. Kingsbury had made an investigation himself. We discussed quite a number of patents, and I told him exactly what the line of research had been by the Pittsburgh Plate Glass Company, and what I understood the proposed method of operation would be. We particularly discussed the Benedictus patent in suit, and I found that Mr. Kingsbury had arrived at practically the same conclusions as I had; namely, to the effect that if we used gelatine in the ordinary way—merely air dry it—and did not use a dehydrating agent to take out moisture, so as to reduce the moisture content below the normal moisture content of gelatine, that there would be no infringement of this patent. Upon my return to Pittsburgh I reported to Capt. Brown and to Mr. Clause——

Q. Will you just let me stop you at that point?

A. Yes.

Q. Now, do you remember attending a meeting in New York City on July 18, 1928, following a notice given by the Triplex Corporation, or its attorneys, that the Pittsburgh Safety Glass Company was infringing the Benedictus patent?

A. Yes, I attended a meeting in New York on July 18, 1928.

Q. Who were there representing the Pittsburgh Safety Glass Company?

A. Representing the Pittsburgh Safety Glass Company were F. B. Davis, who was chairman of the board; C. K. Davis, J. A. Burckel, C. H. Biesterfield, who was in charge of the du Pont patent department, and H. A. Kingsbury, attorney for the du Pont Viscoloid Company.

Q. And yourself.

A. And myself.

[fol. 832] Q. Was the Triplex Company represented at that conference?

A. Yes; Nielson Edwards was there, A. L. Haskell, and their attorney, William B. Greeley.

Q. He was a patent attorney?

A. Mr. Greeley is a patent attorney.

Q. Now, was that meeting an informal meeting?

A. Yes, it was an informal meeting, and Mr. F. B. Davis acted as chairman of the meeting.

Q. Is Mr. Greeley a partner of the learned gentleman, Mr. O'Shea, whom we have here with us this morning?

A. Yes.

Q. Now, did anybody explain the position of the Pittsburgh Safety Glass Company with respect to this Benedictus patent?

A. Yes; Mr. Davis called upon Mr. Biesterfield to explain the position of the Pittsburgh Safety Glass Company with respect to this patent, and Mr. Biesterfield started by explaining just what the Pittsburgh Safety Glass Company was doing in its operation at Creighton. He then discussed the Benedictus patent in considerable detail, pointing out that Benedictus proposed to dry the gelatine on the glass sheets in the usual way, and then apply dehydrating agents, such as alcohol, to remove the excess moisture. Mr. Biesterfield explained that this dehydrating operation must necessarily reduce the moisture content below the normal moisture content of gelatine, otherwise, there would be no object in applying it; and, further, that this is indicated later in the patent in connection with the description of the sealing operation, since Benedictus pointed out that the purpose was to prevent any access of the air to the gelatine, and thus prevent any rehydration of the gelatine. Mr. Biesterfield said that this must mean that Benedictus intended to have his gelatine at a degree of dryness less than

[fol. 833] that of normal gelatine, otherwise, it would not be rehydrated by the air. He then took up the question of the claims, and pointed out that the first eleven claims were clearly each limited to the application of a dehydrating agent to the gelatine. He pointed out that in the operation of the Pittsburgh Safety Glass Company no such step was employed, but that, on the contrary, the gelatine was dried only for a very short period, one or two minutes, before the glass was composited.

Q. How do you mean "it was dried"? Was it dried by an agent, or just allowed to be in the air?

A. That it was dried merely by exposure to the air, and that there was no heating, no other means, to dry the gelatine after it was spread onto the glass. He then discussed Claim 12, and expressed the opinion that the term "substantially free from moisture," as applied to the gelatine, must mean the removal from the gelatine of moisture below the normal moisture contained in gelatine, and that the patent was limited to a dehydrating step which was not used by the Pittsburgh Safety Glass Company.

Q. In this statement that was there made at the meeting by Mr. Biesterfield, state whether or not, in his opinion, the process of the Pittsburgh Safety Glass Company violated this Benedictus patent?

A. He very emphatically expressed the opinion that there was no infringement of the Benedictus patent by the process which was being employed at that time by the Pittsburgh Safety Glass Company.

By Mr. Christy:

Q. Or by the product?

A. Or by the product.

By Mr. Smith:

Q. Did Mr. Greeley, the attorney for the Triplex Company, say anything?

[fol. 834] Mr. O'Shea: Objected to on the ground that it is incompetent, irrelevant and immaterial, and not constituting the best proof.

The Master: I think we will accept the answer, and note an exception to Mr. O'Shea.

A. Mr. Greeley responded very briefly to Mr. Biesterfield's argument; in fact, he practically contented himself

by saying that he could not agree with Mr. Biesterfield's conclusions, that he regarded the Benedictus patent as the pioneer, and that he thought that the product of the Pittsburgh Safety Glass Company constituted an infringement.

Q. On your return to Pittsburgh, after this meeting, will you state whether or not you reported what had been said at the meeting, to anybody, any officer of the Pittsburgh Plate Glass Company?

A. Yes, I made as complete a report as I could to Mr. R. L. Clause and to Mr. H. S. Wherrett, Mr. Wherrett being president of the Pittsburgh Safety Glass Company, and Mr. Clause vice-president and General manager.

Q. At that time did you again state whether or not you believed that this operation, the product of the Pittsburgh Safety Glass Corporation, was a violation or an infringement of the Benedictus patent?

A. Yes; I stated that this conference had reinforced my opinion to the effect that the process and product of the Pittsburgh Safety Glass Company did not constitute any infringement of the Benedictus patent; and I further stated that it seemed to me so clear, that I did not believe that we would ever be sued upon this patent, and I did not think there was any justification for bringing the suit.

Q. Will you state whether or not, at that meeting in New York which you have just described, Mr. Davis, representing the Pittsburgh Safety Glass Corporation, made any [fol. 835] offer to the representatives of the Triplex Corporation to permit the latter to check up the operations of the plant of the Pittsburgh Safety Glass Corporation?

A. He made such an offer, and it was later accepted. In August, Mr. Fahr, who I believe was manager of the Triplex Safety Glass Company, visited the plant of the Pittsburgh Safety Glass Company and saw the complete operation, and later I believe Mr. Edwards saw it—I am not sure whether Mr. Haskell was with him at that time or not.

Mr. O'Shea: The plaintiff objects to all the testimony on the ground that it is immaterial and irrelevant, and seems to constitute an attempt on the part of the defendants to overrule the decision of the District Court for the Western District of Pennsylvania, and the Circuit Court of Appeals for the Third Circuit, and therefore moves to strike the testimony out.

Mr. Smith: Counsel for the defendants respectfully object to the statement which has just been placed upon the record by the learned counsel for the plaintiff. In this case the defendants have the right to show that it was not a deliberate, wilful infringement of this patent, and the testimony of counsel, Mr. Bradley, has been offered for that purpose, and that purpose only, and not as an attack on the decision of the Court in which it was decided, for all time, that there was an infringement of this patent. And we think that no such statement or innuendo should be placed on the record by the learned counsel for the plaintiff.

Mr. O'Shea: Counsel for plaintiff also calls the Master's attention to the fact that in the decision of the case of Triplex v. Saftee, reported at 53 Fed. 2, at page 1062, [fol. 836] the holding of the Court was, that the Benedictus Patent No. 1,182,739 was infringed by the defendant in that case.

(No cross-examination.)

C. L. McHenry, recalled:

Cross-examination.

By Mr. O'Shea:

Q. Mr. McHenry, referring to Defendants' Masters' Exhibit "U," and particularly the sixth column from the right-hand end of the exhibit, am I correct in my understanding that that column means that the exact square footage that was taken out of polished plate stock was, in the instance of the first item, only 18 by 22½ inches?

A. That is correct.

Q. So that when that order was filled, the first operation was to take out of stock a piece of glass 18 by 22½ inches?

A. That is correct.

Q. Now, the next column is headed, "Bracket Size Polished Plate Billed to Duplate"; and on the first item it says, "18 x 24"?

A. Yes.

Q. That merely means that the Pittsburgh Plate Glass Company charged Duplate for a footage of 18 by 24, but that they had only delivered to Duplate, and Duplate had

only used for filling that order, a piece of glass 18 by 22½ inches; isn't that correct?

A. That is correct.

Q. Now, this Exhibit "U" in computing the percentage, which is shown at the bottom, of 7.22 per cent., uses the additions of the column headed "Bracket Size Polished Plate Billed to Duplate," does it not?

[fol. 837] A. It does; it used the total feetage purchased, which is the third column from the last.

Q. And that third column is computed by the multiplication of the fifth column?

A. Right.

Q. From the right-hand edge of the exhibit?

A. Yes, sir.

Q. When you use "purchased" there, you use it in the same sense as billed?

A. Purchased as Duplate, or purchased from the Pittsburgh Plate Glass Company.

Q. Well, that is the general principle followed throughout that whole exhibit?

A. It is; wherever you purchase over one-foot bracket size—whenever glass is furnished over the bracket size, it is customary to bill in the next higher bracket.

Q. Even though the higher bracket is not actually delivered in square footage of glass?

A. Yes, sir.

Q. Now, will you turn to Defendants' Masters' Exhibit "BB." In that exhibit you show a total, which is entitled "Expense Incurred by P. P. G. Co.," of $539,145.98. Am I correct in my understanding that in arriving at that figure you used the total sales of all glass from Pittsburgh Plate Glass Company?

A. This does not represent sales at all. It is expense incurred in making Duplate sales—sales of laminated glass.

Q. But this is an apportionment, isn't it, of all the expense of the Pittsburgh Plate Glass Company in making sales of Duplate?

A. No, it is not.

Q. Well, will you please state how you arrived at that figure of $539,145.98?

A. In that figure is included the salaries and expenses of employees working out of the Pittsburgh Plate Glass [fol. 838] Company general office, on Duplate sales alone, plus the proportion of the warehouse expense, based on the

ratio of warehouse sales of plate glass to that of Duplate. In other words, at our warehouses the expense of selling glass is all accumulated under one heading. In this expense is the cost of selling Duplate, as well as plate glass, so this expense of the warehouses has been apportioned to Duplate on the basis of Duplate sales and plate glass sales.

Q. Well, what figure did you attribute to that apportionment?

A. The proportion of the expense.

Q. I want the total figure of that.

A. $539,145.98 is the total expense, including that direct expense from general office.

Q. Well, but included in that is the general office; now, how much was included in there of the general office?

A. My work sheet is only in summary form; I do not have that figure here.

Q. Well, have you got it any place?

A. Yes, I can get it.

Q. Will you try to have that with you this afternoon?

A. Yes, sir.

Q. Now, have you got your work sheets here showing the actual figures used in making the apportionment, that is allotted against this account, for the warehouse expense?

A. I have.

Q. Well, now, will you just give me those figures.

A. For 1928?

Q. Yes, let's have 1928.

A. The warehouse proportion is $99,156.60.

Mr. Christy: The basic thing—not what the proportion is, but what the start of it is.

[fol. 839] Mr. O'Shea: We will get the proportion in the end.

Mr. Christy: Yes, but you want the start of it now.

A. Do you want this by years?

Q. Let me have 1928 first.

A. For 1928, total sales of plate glass and Duplate was $24,006,602.81. Of that, plate glass was $23,117,615.51; Duplate, $188,987.30. The portion of Duplate to total sales is .037. The total expense of selling glass for the year 1928 was $2,679,908.13. .037 of the above, gives the proportion of warehouse expense applicable to Duplate, of $99,156.60, to which was added the general office expense direct on selling Duplate, of $14,017.46, making a total expense appli-

cable to Duplate in the year 1928, of $113,174.06.

Q. Will you now give the same figures for 1929?

A. The total sales of plate glass, including Duplate, in the year 1929, amounted to $24,776,580.13, of which polished plate sales were $22,222,229.72; Duplate sales were $2,554,350.41; the proportion of Duplate to total sales being .1031. The warehouse expense in 1929 was $2,729,277.92. .1031 of the above gives warehouse expense, applicable to sale of Duplate, of $281,388.55. To this is added the general office expense incurred direct on selling Duplate, of $21,772.17, making a total expense incurred in selling Duplate in the year 1929, of $303,160.72. For the first five months of 1930 the total sales of polished plate and Duplate were $7,755,747.52. Of this, polished plate glass sales were $6,826,463.16; Duplate sales were $929,284.36; or Duplate sales were .1198 of the total. The warehouse expenses in selling glass, for the first five months of 1930, were $968,116.18. .1198 of the above gives Duplate selling expense, at warehouses, of $115,980.32, to which is added [fol. 840] the general office expenses direct, in selling Duplate, of $6,830.88, making a total of $122,811.20.

(Recess taken until 2 P. M.)

Afternoon Session

C. L. McHenry resumes the stand.

Cross-examination (continued).

By Mr. O'Shea:

Q. Mr. McHenry, are not the selling prices used in the accounting as filed by you, particularly the latest one marked in evidence as Defendants' Master's Exhibit "Z", the selling prices from Pittsburgh Plate Glass Company to its warehouses?

A. No; that is sales of Duplate Corporation to Pittsburgh Plate Glass Company.

Q. I mean, sales of Duplate Corporation to Pittsburgh Plate Glass Company, including sales to the Pittsburgh Plate Glass Company's warehouses?

A. Yes.

Q. Now, the warehouses sell at higher prices than they purchase at?

A. In some instances. Most of the orders from the warehouses are from the automobile manufacturers, and the only difference in sales price between the Pittsburgh Plate Glass Company and the warehouse, and the Duplate Corporation, is 3 per cent. commission, or 5 per cent.—whichever period it happened to be in.

Q. That is where the warehouse delivers the goods to the automobile manufacturer and body builder?

A. Yes, sir.

Q. But on all other sales the warehouse charges an additional selling price?

[fol. 841] A. They do on replacements orders.

Q. The Pittsburgh Plate Glass Company's warehouses operate in the same way that an ordinary jobber does; do they not?

A. That is so.

Q. And aren't they self-supporting?

A. In ordinary times they are; just now they're in the red.

Q. Did you open the Duplate books at the beginning of the operations of Duplate Corporation?

A. I did not; Mr. Spahr, himself, did this.

Q. Well, when did you first assume supervision over the Duplate books?

A. I haven't had direct supervision, in the capacity of a supervisor, at any time; I am the auditor for the Pittsburgh Plate Glass Company.

Q. Who acted as the supervisor at all times—Mr. Spahr?

A. Mr. Spahr is the head of all accounting connected with our company, and I work through Mr. Spahr.

* * * * * * *

Q. Mr. McHenry, in the letter included in Defendants' Master's Exhibit "Y", which is signed by you and is part of the testimony, you refer in the second paragraph there to the fact that "We are advised", and at one or two other places you use the same expression. Will you please state who advised you as to matters therein referred to.

A. From the testimony given, and the way the accounts were set up, we took it that these items would be as mentioned in this report.

Q. Then no particular person advised you, it is your own conclusion, from the testimony; is that what we are to understand?

[fol. 842] A. Mr. Christy and I talked these matters over, and if any advice was given, it was Mr. Christy.

Q. On the second page of that letter, Mr. McHenry, in the second paragraph from the bottom, you state, "These statements were taken from Mr. Sharpe's work sheets, and we agree with those figures, and accept them, down to and including the line entitled, 'Costs and Expenses per L. R. B. & M. as Adjusted'." That phrase, "Costs and Expenses per L. R. B. & M. as Adjusted", means, does it not, costs and expenses per L. R. B. & M. as adjusted before elimination of all the Lybrand's account called "Contested Items"?

A. It does.

Q. And that same thing is true where you use that same phrase or quotation in the 1928, or Schedule No. 1, which appears on the fifth line from the bottom of that account.

A. The fifth line from the bottom is the one that we used.

Q. I mean, there you use the expression "Costs and Expenses per L. R. B. & M. as Adjusted", and shouldn't that read, "As Adjusted before Elimination of Contested Items"?

A. That would be correct. But, at the top of the page, it reads, "Reconcilement of Sales, Costs & Expenses—Per Books to Court Accounting to L. R. B. & M. before Elimination of Contested Items."

Q. So that the same thing is meant by this fifth line from the bottom?

A. It is.

Q. Now, I don't know that it makes much difference, but on each of these pages, constituting Schedule No. 1 in this Exhibit "Y", the third line from the bottom is entitled, "Profit or Loss per Court Accounting." Just what do you mean by that phrase "Court Accounting"?

[fol. 843] A. That refers to the original accounting filed by the Duplate Corporation.

Q. That is, defendants' original statement of account as we refer to it in this accounting?

A. Yes.

Q. For purposes of clarification: In this schedule No. 1 you have broken up the total figure into months?

A. That is true.

Q. Whereas, in the defendants' original statement of account it is just set in in a yearly amount?

A. That is right.

Q. Now, this Defendants' Exhibit "Y" is built up practically on the same theory as Plaintiff's Exhibits 9 and 9-A up to that point, where 9 and 9-A eliminates certain items of expense which are called in those exhibits as "Contested Items"; is that so?

A. It is, with the exception of returns.

Q. Well, that is one of the contested items in 9 and 9-A, isn't it?

A. Yes.

Q. So that the line, on each of Schedule No. 1, which is designated as "Costs and Expenses per L. R. B. & M. as Adjusted," is the same as appears in Plaintiff's Exhibits 9 and 9-A?

A. Well, I would not say that they were; I have not checked those last five items through. We accept and agree to this statement down to and including the line stated as "Cost and Expenses per Lybrand, Ross Bros. & Montgomery, as Adjusted."

Q. You are both in accord down to that line, as you say, "Cost and Expenses per L. R. B. & M. as Adjusted"?

A. Yes, sir.

Q. What I mean in the other question, you have not checked the following four lines?

A. No, I have not.

[fol. 844] Redirect examination.

By Mr. Smith:

Q. Mr. McHenry, have you got an Exhibit "U"?

A. I have.

Q. In his cross-examination this morning Mr. O'Shea called your attention to the sixth and fifth columns from the end of that exhibit. Have you it before you?

A. No, I haven't but I can answer all right without.

Q. (Mr. Smith hands witness copy of Exhibit "U".) And brought out the point, as I gathered it, that in some cases the Duplate Corporation was charged for sizes of one-eighth inch plate glass at the price of a given bracket, where the actual measurements of the glass would not be the full limits of the bracket. Was that what was brought out?

A. That is true.

Q. Will you please tell the Master whether the Duplate Corporation was treated like any other manufacturing company?

A. They were treated the same. When a glass is ordered, as in this instance, 18 x 22½, you are charged for 18 x 24, because that is the next bracket over the 22½.

Q. Is that the custom in the plate glass industry?

A. That is the custom with all plate glass industries.

Q. With all of your competitors, as well as your company?

A. To my knowledge, it is.

Q. Mr. McHenry, you were asked a question with respect to Exhibit "Z", whether that exhibit showed prices charged by the Duplate Corporation. And you gave your answer. Does that exhibit show the prices that were actually paid by the various automobile manufacturers?

[fol. 845] A. In this exhibit where it is marked—like sales to Moon Motor Car Company, or Bender Body Company, the sale is billed to the Pittsburgh Plate Glass Company at the amounts shown in this exhibit, and the amount billed to the Moon Motor Car Company, or any other company, would be the same as shown in this exhibit, plus 3 or 5 per cent, whichever the case might be.

Q. And does that same explanation apply, with respect to the sales shown in this exhibit, with regard to all of the customers whose names are given in the first column?

A. It does.

By Mr. Christy:

Q. Now, as to all these billing prices shown on your Exhibit "Z," are they identical with the billing prices shown on Mr. Sharpe's corresponding Plaintiff's Exhibit No. 9?

A. They are, because they were copied from his own reports.

By Mr. Smith:

Q. Mr. McHenry, we have asked you to prepare certain short exhibits, each on one page only, for clarity and to assist the Master and the Court in this case. Have you prepared these exhibits?

A. I have.

Q. I show you Defendants' Exhibit "DD," and ask you what that is?

A. This is a statement of Duplate sales, and sales of plate glass from the Pittsburgh Plate Glass Company to Duplate Corporation, at Creighton. The first line shows the Duplate sales, giving feet, price and amount, for the years 1928, 1929, and the first five months of 1930; the second line shows the sale of one-eighth-inch glass from P. P. G. Co. to Duplate.

[fol. 846] Q. That is, from the Pittsburgh Plate Glass Company?

A. Yes.

Q. In the same way?

A. In the same way.

Q. And what have you to say about the explanatory note at the foot of that exhibit. Just let us read this. I think it is self-explanatory, is it not?

A. It is.

Mr. Smith: We offer in evidence Defendants' Exhibit. "DD."

Q. I now show you Defendants' Exhibit "EE," and ask you what that is?

A. This is a statement showing what one-quarter-inch——

Q. Just read the heading of it.

A. "Statement Showing Profit on Sale of One-eighth-inch Glass from Pittsburgh Plate Glass Company to Duplate Corporation, Allowing Credit for Sale of One-Quarter-Inch Plate Glass to Customers, Had Duplate Not Been Sold."

Q. Now, so that the Master may understand that exhibit, the headings above the respective columns show the years?

A. They do—the years 1928, 1929 and first five months of 1930.

Q. Now, the first item under 1928 is 962,448 square feet. Am I right in understanding that that means the number of square feet in the form of Duplate that was sold in that year, less returns?

A. It does.

Q. And the next item below that, opposite the words "Less Net Sales to Fisher and Fleetwood," is 558,137. That is feet, I believe?

A. That is square feet of Duplate sold to Fisher and Fleetwood during the year 1928.

[fol. 847] Q. Yes; and the table then shows the deduction of the last mentioned item from the first mentioned item, leaving a difference of 404,311 square feet?

A. That is correct.

Q. And that is square feet of Duplate?

A. That is.

Q. Now, the next item below that in this same column shows the sales of one-eighth-inch plate glass from the Pittsburgh Plate Glass Company to Duplate, amounting to 3,600,212 square feet?

A. That is correct.

Q. And the column shows that from the last mentioned figure, you deduct an area of square feet of plate glass equal to the 404,311 square feet of Duplate which you have just explained?

A. Yes.

Q. And making that deduction, leaves the feet of one-eighth-inch plate glass, sold from the Pittsburgh Plate Glass Company to the Duplate Corporation, on which to compute the profit, as being 3,195,901 square feet?

A. That is correct.

Q. The next figure below that is the sales price average at which the one-eighth-inch plate glass was sold to the Duplate Corporation by the Pittsburgh Plate Glass Company, in the year 1928?

A. That is correct.

Q. The next figure below that, being .34432, is the cost of that plate glass, as the Pittsburgh Plate Glass Company claims it to be in its statements of account and testimony heretofore given?

A. That is true.

Q. And, subtracting the last mentioned cost from the sales price average of .41628 leaves, in 1928, a profit per foot of .07196, as shown in this exhibit?

A. That is correct.

[fol. 848] Q. And the last figure in that column, being $229,977.04, is the 3,195,901 square feet multiplied by the profit of .07196 per square foot?

A. That is correct.

Q. Making a profit, in that year, $229,977.04?

A. Yes, sir.

Q. Now, does the same explanation—being altered, however, by altering figures—apply to the 1929 column; also the column headed "1st 5 mos. 1930"?

A. It does.

Q. And, I believe, this exhibit shows opposite the words

"Profit or Loss per Foot," that in the first five months of 1930 there was a loss per foot of .00687?

A. That is correct.

Q. And the same column to which I am referring shows the total loss for the first five months of 1930 as being $6105.82?

A. That is correct.

Q. And the total net profit, combining the three columns as shown by this exhibit, I understand to be $565,046.01?

A. That is correct.

Mr. Smith: Defendants offer in evidence Exhibit "EE."

Mr. O'Shea: Objected to as incompetent, irrelevant and immaterial.

The Master: It will be received subject to Mr. O'Shea's objection.

Q. Now, Mr. McHenry, there are several tables of figures on this Exhibit "FF"?

A. Yes, there are.

Q. What is the first table of figures?

A. The first is a statement showing profit on sale of one-eighth-inch glass from the Pittsburgh Plate Glass Company, at Creighton, to Duplate Corporation.

[fol. 849] Q. And it gives the figures for the years 1928, 1929, and the first five months of 1930 separately in each of the three cases?

A. Yes, it does.

Q. It gives the number of feet of one-eighth-inch glass sold by Pittsburgh Plate Glass Company to the Duplate Corporation in each of those years, does it?

A. Yes.

Q. It gives the sales price average for each of the years?

A. It does.

Q. For example, in the year 1928 the sales price average was .41628, meaning 41 cents and a fraction a foot?

A. Yes, sir.

Q. It gives next the cost as filed, being the same cost which is shown on Defendants' Exhibit "EE," except that in "FF" there has not been any reduction in feetage for the plate glass which would have been sold if no Duplate had been sold?

A. That is true.

Q. It shows the difference between the sales price aver-

age and the cost as filed, as thus described, and the profit and loss per foot? For example, in the year 1928 the profit per foot is .07196, meaning 7 cents and a fraction?

A. That is correct.

Q. And it gives at the foot of each of these three years, or fraction of a year in the last case, the total profit or loss, as the case may be?

A. Yes, it does.

Q. Showing, for example, in 1928 a profit of $259,071.25, and for the year 1930 a loss of $10,189.73?

A. That is correct.

Q. And it shows the profit or loss for the entire accounting period as being $712,998.65?

A. That is correct.

[fol. 850] Q. Now, the next table of figures, below the one we have discussed on this Defendants' Exhibit "FF," is what?

A. This was made up for illustration only, showing the profit computed, excluding items which Triplex Company claims should be excluded. It shows for the years 1928, 1929, and first five months of 1930.

Q. Now, take the year 1928, this column shows the items of cost which the Triplex Company claims should be excluded, as follows: Allowance for use of patented process, .12474, being 12 cents and a fraction?

A. That is correct.

Q. It shows the Federal income tax of .02267?

A. That is correct.

Q. Each of these last mentioned figures have been amounts per foot?

A. That is correct.

Q. It shows below that, this special cutting loss of .01548?

A. That is correct.

Q. And then it shows the total of the items of cost, which the Triplex Company claims should be excluded, as being .16289, meaning 16 cents and a fraction per foot?

A. That is correct.

Q. The next figure is the cost of the one-eighth-inch plate glass, as the Pittsburgh Plate Glass Company claims it to have been, being .34432; that is, 34 and a fraction cents per square foot?

A. That is correct.

Q. The next is a subtraction from the total items of cost, which the Triplex Company claims should be excluded, being .16289, from the cost as the Pittsburgh Plate Glass Company claims it to have been, being .34432, or .18143, being a cost, according to Triplex claim, of 18 and a fraction cents a foot?

A. That is correct.

[fol. 851] Q. Below that it shows the sales price from the Pittsburgh Plate Glass Company to the Duplate Corporation, being .41628, or 41 and a fraction cents per square foot?

A. That is correct.

Q. And from the last mentioned square foot figure is deducted the one which I have mentioned immediately preceding, leaving a difference of .23485, being 23 cents and a fraction per square foot, which is the profit per foot as the Triplex Company claims it to have been?

A. That is correct.

Q. And then the last figure applies the profit per foot, as the Triplex claims it to have been, to the total feetage sold, making a profit for 1928 of $845,509.79—as the Triplex Company claims it to have been?

A. That is correct.

Q. Now, does the same explanation apply to the columns entitled, respectively, 1929, and first five months 1930, as modified by the different figures in those columns?

A. It does.

Q. Now, immediately below, and as part of that tabulation, you have inserted a table of figures representing what?

A. Above profit reduced by deducting feet of plate glass which Pittsburgh Plate Glass Company would have sold if no Duplate had been sold (see Exhibit "EE").

Q. In other words, applying Exhibit "EE," which you have already explained, to this column of profit as made by the Triplex Company, it gives the result?

A. It does.

Q. For example, in the year 1928 it shows that there would have been 404,311 square feet of one-quarter-inch plate glass sold, if the Pittsburgh Plate Glass Company

[fol. 852] had not sold any laminated glass at all; is that right?

A. I would say, if the Duplate Corporation had not sold any laminated glass.

Q. Well, if there had been none sold by the Duplate Corporation or the Pittsburgh Plate Glass Company, as its agents?

A. Yes, sir.

Q. And it applies to that figure the profit per foot claimed by the Triplex Company, given above, being twenty-three and a fraction cents a foot; and shows a profit in dollars of $94,952.44?

A. It does, for the year 1928.

Q. Does that mean that you have deducted from the profit, for 1928, of $845,509.79, as claimed by the Triplex Company, the profit, at the same rate per foot, on the 404,311 square feet of plate glass which, the testimony of the defendants indicate, would have been sold if no laminated glass had been sold?

A. Yes, sir.

Q. Does the same explanation—altered only as the figures alter it—apply to the column headed "1929," and the column headed "1st 5 Mos. 1930"?

A. It does.

Q. And the total thus deducted from the claim of the Triplex Company is how much?

A. $484,381.

Q. Leaving the total profit, as claimed by the Triplex Company, and as reduced by these figures you have just explained, as how much in dollars?

A. $1,732,397.

Q. Now, the next table on that exhibit is what?

A. A statement of Duplate Corporation loss.

Q. Covering these same three separate periods of time?

A. Covering these same three separate periods of time.

[fol. 853] Q. Now, take the 1928 as an illustration; it shows for that year the account of loss, as originally filed by the Duplate Corporation, as being $560,548.03?

A. Yes, sir.

Q. The next item is a deduction, entitled "Less Items not Considered Operating Cost," of $7140.48. What is that?

A. These items of experimental expenses—donations, patent expense, and cost of Triplex suit, that we say now should not be considered operating cost.

Q. That is to say, that figure $7140.48 includes items, heretofore given as experimental expense, which the Pittsburgh Plate Glass Company now concedes should be deducted as an expense item?

A. Yes.

Mr. Smith: And the next item below that, I think, is self-explanatory, Mr. Shrum?

Q. It is this interest on investment for 1928, $35,000, showing a total of $42,140.48, which the Duplate Corporation now concedes should be deducted from the original statement of loss filed in this proceeding for that year?

A. That is correct.

Q. Leaving the net loss for that year $518,407.55?

A. That is correct.

Q. Now, the same explanation applies to the column entitled "1929," and to the column entitled "1st 5 Mos. 1930" —as the figures are altered by the figures appearing in those respective columns?

A. It does.

Q. And the result is to show the Duplate Corporation loss for the accounting period as being—omitting for the present returns and allowances—$911,617.44?

A. That is correct.

Q. Now, what is the next item of loss appearing in the column, that is the final column, of $83,561.42?

[fol. 854] A. That is returns received since June 1, 1930, when our original accounting was filed—or filed before that date.

Q. You mean, returns of defective Duplate?

A. Yes, sir.

Q. And the next figure below, in the final column, of $72,-060.42, what is that?

A. That is allowances that have been credited since June 1, 1930, applying to the infringed product manufactured prior to that date.

Q. Allowances to whom?

A. To warehouses and others.

Q. And the reason this figure is included, as the $83,561.42 figure is included, is because these items came in after the date to which your prior accounting was filed?

A. Yes, sir.

Q. And the result is, to wit, the Duplate Corporation loss, a total of $1,067,239.28, as shown by this exhibit?

A. Yes, sir.

Mr. Smith: Defendants offer in evidence Defendants' Exhibit "FF," and in connection with this offer we respectfully call the attention of the Master to the fact that we do not mean by this offer to give any credence or weight whatever to the claim of Triplex of a profit of $2,216,778; we are doing this so that the Master and the Court can understand this situation; and also so that we may show, even on that basis, the deduction for the plate glass which we claim we would have sold if no Duplate had been sold.

The Master: That is understood.

Q. Now, I hand you Defendants' Exhibit "GG" and ask you what that is?

[fol. 855] A. This is a statement showing gross sales and cost of sales of Duplate for period, years 1928, 1929 and first five months of 1930.

Q. When you say "cost of Duplate," I understand that includes all operating and other expenses?

A. It does.

Q. Now, let us take the year 1928, so that we understand this: The first subdivision, consisting of three columns, gives for that year of 1928—first, the sales of Duplate in square feet?

A. Yes, sir.

Q. It gives the price per square foot, realized for that Duplate, being 1.9951; that is to say, one dollar ninety-nine cents and a fraction?

A. Yes, sir.

Q. And then the next column gives the total price received for the whole number of square feet, at this price per square foot?

A. Yes, sir.

Q. That is an average price?

A. Yes, sir.

Q. Now, the second line gives the cost of production of this same Duplate?

A. It does.

Q. And the cost per square foot of that Duplate in the year 1928 was 2.4740, being two dollars forty-seven and a fraction cents per square foot?

A. Yes, sir.

Q. And the total cost, as shown by the exhibit, is $2,678,-202.87.

A. That is correct.

Q. And the next line below, entitled "Profit or Loss," gives the same number of feet—the loss per square foot and the total loss?

A. Yes, sir.

Q. And the loss per square foot of Duplate in that year was .4789, being forty-seven and a fraction cents, as shown by this exhibit?

[fol. 856] A. Yes, sir.

Q. Does the same explanation, except as altered by change of figures, apply to the subdivision for 1929, and the subdivision for the first five months of 1930?

A. It does.

Q. The exhibit shows that the loss per square foot of Duplate in the year 1929 was .1746, being seventeen and a fraction cents per square foot?

A. That is correct.

Q. And it shows that the average cost per square foot of Duplate in the year 1929 was 2.2049, being two dollars twenty and a fraction cents?

A. That is correct.

Q. It shows, for the first five months of 1930, that the cost per square foot of Duplate was 1.6611, being one dollar sixty-six and a fraction cents per square foot?

A. That is correct.

Q. And it shows a profit in that year of .0127 per square foot; that is to say, one and a fraction cents per square foot?

A. That is correct.

Q. When you come to your totals, we find that during the accounting period the total sales of Duplate in square feet were 4,141,206 square foot?

A. That is correct.

Q. And the total selling price of this number of square feet was $8,101,614.63?

A. That is correct.

Q. Whereas, the same square feet cost the Duplate Corporation to produce, $9,013,232.07?

A. That is correct.

Q. And subtracting from the amount last mentioned, the amount mentioned immediately preceding, leaves the loss to the Duplate Corporation in the sum of $911,617.44?

[fol. 857] A. That is correct.

Q. And below that you have added two items of returns and allowances, which you have already explained?

A. Yes, sir.

Q. Making the total loss of the Duplate Corporation, during the accounting period, how much?

A. $1,067,239.28.

Mr. Smith: Defendants offer in evidence Defendants' Exhibit "GG."

Mr. O'Shea: Objected to, as irrelevant and immaterial.

The Master: It will be received subject to Mr. O'Shea's objection.

Q. We hand you Defendants' Exhibit "HH," and ask you what that is?

A. This is a statement of profit on certain of Duplate sales, if average cost is applied to individual sales.

Q. This is a summary, is it not?

A. It is.

Q. And it shows in the same divisions, with respect to years, you have already mentioned?

A. It does.

Q. For example, in the year 1928 there is a profit, on certain of the Duplate sales, of $3406.46?

A. That is correct.

Q. The next item below that, which is entitled "Plus Profit Due to Allowance of Additional Expenses as Non-Operating," $33.11?

A. That is correct.

Q. That is, certain items heretofore charged to operating expense which we now concede should not be so charged?

A. That is true.

[fol. 858] Q. And it makes a total for that year, of the profit on certain of Duplate sales, of $3439.57; is that right?

A. That is correct.

Q. The same explanation applies to the year 1929, and the first five months of 1930—altered by the altered figures?

A. That is correct.

Q. And the result is to show—excluding for the moment allowances—a profit, on certain of the Duplate sales for the accounting period, of $184,666.84?

A. That is correct.

Q. Now, below that is an item entitled "Less Proportion of Allowances since 6/1/30" (meaning June 1, 1930), in the sum of $18,231.29. What is that?

A. This is the proportion of the allowances received since June 1, 1930, that we allocated to profit making sales.

Q. And it leaves the net profit, on certain of Duplate sales for the accounting period, of what sum?

A. Of $166,435.55.

Q. Does this exhibit conflict with the table on Defendants' Exhibit "FF," on which it shows that during the accounting period the Duplate Corporation lost $1,067,-239.28?

A. It certainly does, because, figuring it from our books, it will show $1,067,239.28 loss. When we compute the profit on the individual sales, using the average monthly cost, we get this result.

Q. Well, it conflicts in that sense?

A. Yes.

Q. But is there anything in these figures on Defendants' Exhibit "HH," which indicates that the figures on Exhibit "FF," to which I have called your attention, are incorrect? I am not asking you now to pass on the law of the case; I am just talking about figures.

A. No.

[fol. 859] Q. That is to say, while taking the business as a whole, during the accounting period, there was a loss to the Duplate Corporation of $1,067,239.28, as shown on Defendants' Exhibit "FF," if you pick out certain sales which are profitable, when considered by themselves, and applying the average cost of them, you get this result of $166,-435.55, as shown on Defendants' Exhibit "HH"?

A. That is correct.

Mr. Smith: We offer in evidence Defendants' Exhibit "HH."

Q. I show you Defendants' Exhibit "II," and ask you what that is?

A. This is a statement of items excluded from cost by accounting as claimed by Triplex Company (Plaintiff's Exhibits 9 and 9-A).

Q. Now, by this exhibit do you mean to concede that these items excluded were properly excluded by the Triplex Company?

A. Not at all.

Q. Was this statement prepared in order that the Master and the Court could see on one sheet the items which the Triplex Company claims should be excluded from costs?

A. That is the purpose of this sheet.

Q. And are the years and the various subdivisions, with their headings, self-explanatory?

A. They are, and were taken from the Exhibits 9 and 9-A of the plaintiff.

Mr. Smith: We offer in evidence Defendants' Exhibit "II,"—not for the purpose of showing that these items of cost were properly excluded, but only that the Master may see what items were excluded, without too much trouble.

[fol. 860] Recross-examination.

Mr. O'Shea: I should like to reserve my cross-examination on these Exhibits "DD" through "II" until I have an opportunity to give them a little closer scrutiny. So far as I see at this moment the Exhibits "DD" to "HH" appear to be very well explained on the record by Mr. McHenry, but I am not entirely sure I fully understand Exhibit "II," so if I may be granted the permission to reserve that, I will have no cross-examination at this time on those exhibits.

The Master: You may.

Mr. O'Shea: But, for the purpose of clarity, I should like to ask Mr. McHenry one question in reference to Exhibit "Z."

Q. Mr. McHenry, referring to Defendants' Master's Exhibit "Z," and particularly to sheet No. 1, for the month of January, 1929, am I correct in my understanding that the sales listed on that sheet, as having been made to Pittsburgh Plate Glass Company warehouses, was sold by the

warehouses at a higher price than the price given on that sheet?

A. May I ask for Exhibit 9-A covering the month of January, 1929, of Sharpe's? (Handed Exhibit 9-A.) These last four items that you have referred to were billed from the Duplate Corporation to the Pittsburgh Plate Glass Company at certain figures and amounts; these same amounts were billed to the warehouses, with the exception of one item, I notice, $554.37, where it was billed to the warehouse at $554.39. We don't know at the Pittsburgh office what this was billed to the customer, when sold, on these items.

Q. But isn't it the custom, in the Pittsburgh Plate Glass organization, for the warehouse to charge an additional amount than the amount which they pay ("they" meaning the warehouse), to the Pittsburgh Plate Glass Company?

[fol. 861]

A. It is, with the exception of where the order comes from a body builder or automobile manufacturer.

Q. But in all other cases they do charge an additional amount, or in a great many other cases, in most other cases?

A. I would say they do.

Mr. Smith: If the Master please, the plaintiff has offered in this case an exhibit which I understand was marked Plaintiff's Exhibit 27, being a schedule of Duplate infringing sales, the first sheet of which is entitled "Summary of Damages on Infringing Sales," and the last line of which reads as follows: "Total Jan. 1928—May 1930, $3,538,731.42, $320,647.76, $3,188,083.66," the summary sheet to which I have referred being dated 6/5/31 (which I understand means June 5, 1931), and included in which exhibit are a large number of sheets which I understand are supposed to make up the information shown on the first summary sheet.

(Counsel for defendants now asks Mr. O'Shea to state on the record whether he wishes to withdraw this exhibit, or whether he intends to stand on that exhibit in this case.)

Mr. O'Shea: I do not wish to withdraw the exhibit.

[fol. 862] H. S. WHERRETT, a witness produced on behalf of the defendants, having been previously sworn, testified as follows:

Direct examination.

By Mr. Smith:

Q. Mr. Wherrett, do you recall the fact that the Duplate Corporation sold to the Fisher Body Corporation a quantity of Duplate early in 1928 at the price of $1.75 a square foot.

A. I do.

Q. Did your company make that price for the purpose of undercutting the Triplex Corporation, or interfering with its business in any way?

A. Not at all.

Q. Why did you make that price?

A. Because our policy at that time was very definitely and distinctly to interest one or more automobile manufacturers in the use of laminated glass, preferably for standard equipment, if possible; if not, for possible use in their cars; believing that that was the best way to develop the use of this product in which we were vitally interested.

Q. Did you encounter any sales resistance in endeavoring to get the automobile manufacturers to buy this product?

A. We did—a great deal of resistance.

Q. Will you state whether or not there was any public demand for this laminated glass at that time?

A. Extremely little; some very slight demand from individuals who knew about it—perhaps bought it for a car—but in a general way there was no demand that we could find.

Q. Did the price at which your were endeavoring to sell the product make any difference in your ability to make sales?

A. It made all the difference, I think; it was the vital point.

[fol. 863] Q. When Mr. Higgins was on the stand yesterday I read into the record some testimony given by Mr. Edwards, of the plaintiff corporation, referred to on pages 166 and 167 of the stenographer's transcript. I do not wish to read that testimony again into the record, but, with the Master's consent, I will call your attention to the points of

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that testimony as to which I wish to interrogate you. This testimony referred to a conversation which Mr. Edwards said he had had with yourself and Mr. Higgins on or about October 5, 1928. Mr. Edwards testified, in substance, that they (that is, meaning yourself and Mr. Higgins) took the position, and told Mr. Edwards and his associates, that you were going to sell laminated glass to one automobile manufacturer in each price class, irrespective of what they got for the product, (that is, irrespective of what you got for the product), on the theory that if you got one manufacturer in each price class to adopt laminated glass, the other people would have to follow; and that you did not know what it cost you to make laminated glass, and did not know how to set a price. Did either you or Mr. Higgins make such a statement in this conversation?

A. Didn't know how to set a price?

Q. Didn't know what it cost you to make it, and didn't know how to set a price.

A. I do not recall any conversation to that effect. I remember the visit Mr. Edwards made—I do not remember the date—I remember a discussion about the whole situation of the laminated glass business—policies, prospects, and so forth—but there was no statement to that effect that was made by me, or in my presence.

Q. Did either you or Mr. Higgins say you were going to sell laminated glass to one automobile manufacturer in each price class, irrespective of what you got for it?

[fol. 864] A. Decidedly not.

Q. As a matter of fact, did you endeavor to sell to one manufacturer in each price class, irrespective of the price?

A. No, we did not; obviously, if we had, I think we would have secured some contracts that we never had.

Q. The witness, Mr. Haskell (a witness for the plaintiff corporation) testified on this subject—and I read his testimony into the record yesterday when Mr. Higgins was on the stand, and I don't want to read that long quotation again—I refer to pages 192 and 193 of the transcript. With the Master's permission I will ask you concerning certain parts of the conversation. This testimony of Mr. Haskell referred to this same meeting, in October, 1928, between Mr. Haskell and Mr. Edwards for the Triplex Corporation, and yourself and Mr. Higgins for the Duplate Corporation. Mr. Haskell testified that during that conversation, among other things, Mr. Higgins made the statement, that it was

to be your policy to get one car in each price class—something in the lower price class like Chevrolet, and something in the middle price class like Buick, Nash and Chrysler, and something in the higher price class like Pierce-Arrow, Cadillac and Lincoln—one of those—to adopt safety glass all around; that you had offered to sell at various prices, according to Mr. Higgins, and that Mr. Higgins said that you expected to keep after the situation until you struck a price at which you thought these men would be interested. Did either Mr. Higgins, or yourself, make any such statement in this conversation?

A. I think, in part, we did, because we firmly believed that the way to develop this business, and in a manner that would be helpful and desirable to the industry, was to get a manufacturer in each price class, if possible, to adopt safety glass. We believed that thoroughly, and talked it [fol. 865] freely and frequently to our competitors, and, I dare say, we did to Mr. Edwards and Mr. Haskell that day.

Q. But did Mr. Higgins, in that conversation, say anything to the effect that you expected and would endeavor to get one automobile manufacturer in each of those price classes, irrespective of what price you got for the product?

A. I am sure he made no such statement in regard to the price.

Q. Did you make such a statement?

A. I have not, nor have I heard such a statement made in my presence by any representative of the company.

Q. Do you know whether or not it is an advantage in selling plate glass, to have orders calling for a large number of a particular size?

A. I do, very distinctly, from years of experience.

Q. Will you explain briefly whether it is an advantage to your company to have orders for a large assortment of sizes of plate glass—with particular reference to finding defects in the sheet from which you have to cut?

A. The character of the plate glass business is such—with reference particularly to defects—that it is very distinctly to the advantage of the manufacturer to have an assortment of sizes, rather than a specification confined to a limited number of sizes.

Q. Why is that, Mr. Wherrett?

A. Because, with the defects that you are bound to find in plate glass, inherent to all plate glass product, you must cut your glass with due respect to those defects. Now, if you have an assortment of sizes, you have a much better opportunity of cutting with a minimum shrinkage than if you have just a few sizes; the result being in the latter case, [fol. 866] that you have an increased shrinkage, indirectly meaning waste that goes into the cullet bins, pieces that have to be thrown away, and, secondly, residual sizes, sizes that have questionable or no merchantable value, which you put into stock.

Q. It has appeared in the testimony in this case, that the Pittsburgh Plate Glass Company charged Duplate Corporation a commission, first of 5 per cent, and afterwards of 3 per cent, on the sales of Duplate. Will you tell the Master whether or not, in your opinion, those commission charges were fair and reasonable—at least, from the standpoint of the Duplate Corporation?

A. Well, they proved from experience to be quite inadequate, but we started out without definite knowledge as to just what it cost to sell this product, although we, the Pittsburgh Plate Glass Company representatives, knew quite well from other experiences that the commission was very small; however, we decided upon that basis purely in an experimental way, and tried it out.

Q. Now, do you think either of those commissions were too high, from the standpoint of the Duplate Corporation?

A. Decidedly not.

Q. It appears that the Pittsburgh Plate Glass Company gave the Duplate Corporation a special discount of 10 per cent on one-eighth inch plate glass, compared with the prices charged to other purchasers, and that this was made effective as of June 1929. Why did you make that discount?

A. It came about in this way: The Duplate Corporation had been making a very sorry showing, having a consistent loss, a substantial loss, and some of our associates on the board of directors thought that some consideration should be shown to the Duplate Corporation in the cost of the [fol. 867] raw materials, to enable them to make a better showing, and prove a little incentive; and it was for that reason alone that this 10 per cent differential was allowed.

Q. I believe the du Pont Viscoloid Corporation also al-

lowed a 10 per cent reduction in the price of pyralin, and made it effective as of the same date?

A. That is correct.

Q. Was that for the same reason?

A. Exactly.

Q. As you go about, do you pay any attention to the quality of laminated glass that you see in automobiles in the highways and other places—for example, Ford windshields?

A. I do, most decidedly.

Q. What did you observe as to the character of the Ford windshields which were produced during this accounting period, which began January 1, 1928, and running to May 31, 1930?

A. Well, I do not know that I could define exactly the period.

Q. I am not speaking of the period, I am speaking of cars that were made during that period.

A. There is no question about that; it is so obvious that cars produced during that period contained laminated glass in the windshields that was quite inferior, it deteriorated and was quite unsatisfactory for the purpose, quite unsightly; and, as a matter of fact, proved to be quite a detriment to the development of the safety glass business.

Q. Are you referring particularly to the Ford windshields?

A. I am referring primarily to the Ford windshields.

Q. And do you know whether or not the fact of the character of the Ford windshields produced in that period [fol. 868] is a matter of common knowledge and common talk in the glass industry?

A. Distinctly so.

Q. Do you remember when Libby-Owens entered into competition in the laminated glass field?

A. I do not, I should have to make just a guess at it, I do not remember the exact time.

Q. Mr. Higgins testified it was in the latter part of 1928.

A. That is also my recollection.

Q. What was the character of the competition of the Libby-Owens Company; was it active and keen competition?

A. Extremely active. Almost from the beginning of their entry into the business we began to feel keen compe-

tition, in that they quoted lower prices than we quoted, or any other manufacturer in the business quoted.

Q. Did they take business away from your company on price?

A. They took business, where we were competitive, because they made a lower price; yes.

Q. Mr. Wherrett, assuming that in the year 1928 the Duplate Corporation sold approximately 962,448 square feet of Duplate, will you please tell the Master whether or not in your opinion the Pittsburgh Plate Glass Company would have sold that number of square feet of three-sixteenths inches or one-fourth inch plate glass if no laminated glass had been sold at all; excluding, however, the sales of laminated glass to the Fisher Body Corporation and the Fleetwood Corporation.

A. I am quite positive that we would; I have every reason to believe so.

Q. Assuming that the sales to the Fisher and Fleetwood Corporations were approximately 558,137 square feet of Duplate, is it your opinion that, deducting that amount [fol. 869] from the total Duplate sales which I have mentioned, leaving 404,311 square feet of Duplate, your company would have sold that number of square feet of one-fourth inch and three-sixteenths inch glass if you had not sold any laminated glass at all?

A. It is decidedly my opinion.

Q. Assume that in the year 1929 the sales of Duplate by the Duplate Corporation were approximately 2,019,360 square feet, the sales to the Fisher Body Corporation, including Fleetwood were approximately 640,155 square feet, and deducting the latter amount from the former leaves 1,379,205 square feet of Duplate. Is it your opinion that in that year the Pittsburgh Plate Glass Company would have sold that many feet of one-fourth inch or three-sixteenths inch plate glass if no laminated glass had been sold at all?

A. It is.

Q. In other words, as I understand your testimony, the sale of this laminated glass, to the extent that you have mentioned, was just replacing one product by another; is that right?

A. That is correct.

Q. I mean, one of your products for another.

A. That is right.

Q. And if there had been no sales of this laminated glass, your company would have sold an equivalent area, in square feet, of one-fourth inch and three-sixteenths inch plate glass, which, in the year 1929, would have been 1,379,205 square feet?

A. That is correct.

Q. Assume that in the first five months of 1930 the sales of Duplate were approximately 617,728 square feet, and in the same period, the sales of Duplate to Fisher and Fleetwood were approximately 23,272 square feet, and deduct- [fol. 870] ing the last mentioned figure from the one immediately preceding in this question, leaves 594,456 square feet. State whether or not, in your opinion, the Pittsburgh Plate Glass Company would have sold that area, in square feet, of one-fourth inch or three-sixteenths inch plate glass if no laminated glass had been sold at all by the Duplate Corporation.

A. I am very positive that they would.

Q. And you understand in this question when I say, "If no laminated glass had been sold at all", in all of these questions, I mean, if no laminated glass had been sold by the Duplate Corporation?

A. I understand.

Cross-examination.

By Mr. O'Shea:

Q. Mr. Wherrett, are you sufficiently familiar with the facts in connection with the laminated glass business of Duplate Corporation to enable you to say whether or not that company did sell glass at prices which produced no profits?

A. Yes, sir.

Q. Well, I understand by that that they did make such sales?

A. We did.

Q. That is all.

(Adjournment on call of Master.)